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BULLETIN

OF THE

North Carolina Board of Health.

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RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XII

APRIL, 1898.

No. 12.

ELECTION OF COUNTY SUPERINTENDENTS OF HEALTH.

Under the law as amended by the last Legislature, County Superintendents of Health are to be elected annually on the first Monday in May. We sincerely hope that the several boards of County Commissioners will elect the best man available to this responsible office, and we especially hope that those few boards which failed to elect a year ago will not overlook it again. The law is mandatory on the subject and allows the board no discretion in the matter, and a failure to elect is a plain violation of the oath of office.

SMALLPOX IN NORTH CAROLINA.

On the 30th of March we received a telegram from the Superintendent of Health of Rowan county announcing "a probable case of smallpox" at Salisbury. A subsequent report stated that it was genuine and that the patient would recover. The person affected was a colored postal clerk on the run between Salisbury and Knoxville. The source of contagion was easily traced to a case of smallpox

which occurred and remained in the clerk's Knoxville boarding-house. Dr. Whitehead, the superintendent, promptly took the necessary preventive measures—how thoroughly and successfully is attested by the fact that up to this present writing (three weeks) no new case has occurred.

On the 14th inst. (April), Dr. Fletcher, the municipal health officer of Asheville, reported a case of smallpox in a negro ten days from Jacksonville, Fla. As the case occurred in a negro restaurant we are anxious lest the disease spread, notwithstanding the precautions taken by the health officer.

We regret to learn that a deep prejudice against vaccination crops up every now and then, chiefly among the ignorant—the very element of the population which, owing to the over-crowding and other unsanitary conditions usually co-existent with ignorance, is in peculiar need of the protection afforded by vaccination. The question is how to overcome this prejudice. We have more than once asked our readers for suggestions as to the best practical method of getting the people vaccinated, but not one has responded. It

is easy to understand why it is a problem extremely difficult of a practical solution. Fortunately the feeling against vaccination is sporadic, and we shall console ourselves with the hope that as time passes and knowledge spreads this prejudice will disappear.

Since the a. was sent to the printer we have received the following, under date of April 19th, from Dr. Fletcher: "We have the second case of smallpox, imported from Spartanburg, S. C. She ran away from Spartanburg to prevent being taken to the pest-house. Was broken out when she came to Asheville. Was in her own house from Monday night till Friday morning before she was discovered, and a number of people went to see her. Both patients (negroes) are properly quarantined in a pest-house which we established with difficulty—met with armed resistance. Judge Hoke refused to enjoin our Board of Health till we had a hearing. Long before the day set for a hearing came I had my house built (a comfortable two-room house) and my patients in it. For fear of having to pay a big bill of costs the opposition withdrew the application for injunction. We are vaccinating every one as fast as possible; are meeting with some opposition. We have a compulsory vaccination ordinance and mean to fight it out along these lines with tact and discretion."

It is evident that the Health Officer of Asheville is made of the right kind of timber.

THE HOME OF CONSUMPTION.

We print below an extremely interesting communication bearing upon the production of consumption. It indicates in the first place that consumption is essentially an *indoor disease*. There is great probability that the germ which causes consumption is quickly destroyed when

freely exposed to light and air. Indeed, this is not a matter of conjecture, but has been demonstrated time and again. And while the practice of expectorating, or spitting, on the streets is to be deprecated—whether by consumptives or other persons—the great danger comes from such material being cast into dark, unventilated rooms, where the germs may live for an unknown time—probably for years. It will be noted that the house referred to below, in which fifteen persons probably, and thirteen certainly, died from consumption or tuberculosis, "is very damp and the cellar in bad condition," and furthermore it is *surrounded by dense foliage*.

It has long been known that dampness is a factor in the production of consumption, probably acting as a *predisposing* cause. It has been shown for a number of towns that subsurface drainage and consequent drying of the soil has always lowered the death rate from consumption where a wet soil had been the condition theretofore. The dense foliage spoken of would cut off both air and light. Such a house, becoming infected, would remain a center of infection for a long time.

The most satisfactory part of Dr. Gaston's statement is his reference to public opinion regarding this house. It is safe to say that no other family will move into it. The question may be referred to the court to determine the power of the Board of Health to order its destruction.

What is most needed is that public opinion throughout the land shall be brought to the level of that of the people of Mineral Ridge. Not that it is necessary that houses in which people with consumption have lived or died need be destroyed, for such houses can be made perfectly safe by modern methods of disinfection. And there seems no escape from the conclusion that cases of consumption should be reported to the health authori-

ties, in order that this may be done. Following is the communication from Dr. Gaston:

MINERAL RIDGE, O., March 29, 1898.

*Dr. C. O. Probst, Secretary State
Board of Health, Columbus, Ohio:*

DEAR SIR—Relative to the house in this village, mentioned some time since, which has sheltered so many tubercular victims, I enclose you a history of the same as nearly correct as I could obtain it from various sources. I am informed that it was thoroughly disinfected about one year ago; that the building is very damp and cellar in bad condition; that in no way will other residents of the town be satisfied until it is fired. The mother refuses to give up the house, although urged to do so by the remaining children. The local Board has discussed this matter, and now asks the State Board to take such action as they deem best in the matter. The residents of this place look upon the home with horror, and if the family were to move out, I have no doubt that the building would go up in flames inside of twenty-four hours, and not a hand would be turned to save it.

THE HISTORY OF A HOME.

This house was constructed about 1830, and was occupied by a family of the name of F. It is related that a young man who lived with the family was "always ailing and in delicate health," but the only death was that of a baby with bowel trouble. They resided in the premises until about 1846, when the house was occupied by a family named S. They were an unusually strong and healthy family when they first came to this place, with no previous tubercular history. The first one connected with this family to pass away was a lady boarder, but information does not reveal the cause of her death. It was quickly followed, however, by the death of two sons, two daughters, father and mother, from tuberculosis, leaving only one son, who had previously gone to Illinois on account of his health, and who still survives. From 1879 until now the house has been held by the present occupants. There is no history whatever of consumption in the family prior to their coming to this house. The daughter who died recently was born here. Her death was the seventh in the family in as many years from pulmonary tuberculosis. A

sister, two brothers and a mother survive, but the characteristic traces of the disease are plainly visible in the faces of one brother and the surviving sister. The building is a story and a half high, and is surrounded by dense foliage.

Yours truly,

JAS. E. GASTON, M. D.
—*Ohio Sanitary Bulletin.*

We take much pleasure in printing the above most impressive statement of facts, for it is on the lines indicated by our friend, Dr. Probst, viz., abundance of fresh air and sunlight, and the thorough disinfection of infected houses, that the ravages of "the great white plague" can be most effectively curtailed. As "The Best Method of Preventing Tuberculosis" has been selected by the Leader of Debate, Dr. Burroughs, of Asheville, for discussion at the approaching meeting of the State Medical Society, we will reserve what we have further to say on this—literally from the sanitarian's point of view—most important subject for our next issue. We desire, however, to call particular attention to the next article as showing how easily, simply and cheaply the disinfection can be accomplished.

FORMALDEHYDE DISINFECTION AGAIN.

During the month tests have been made of still another, and the latest, apparatus devised for formaldehyde disinfection. This consists, substantially, of a copper receiver of about half a gallon capacity, from the bottom of which a small pipe leads to a coil heated by a kerosene lamp. The agent is the usual 40 per cent. formaldehyde solution (formalin), which is slowly admitted to the coil, where it is volatilized by the kerosene flame and the resulting gases are blown through a rubber tube into the room through the key-hole of a door. It is another modification of the Trillat autoclave, but possesses some advantages. It is easily handled,

free from danger of explosion and is operated entirely outside the room to be disinfected.

Its chief drawback is that which has caused the abandonment of other "generators" of this type, to-wit, that when the solution passes into the red-hot coil the water is quickly boiled off, the solution becomes concentrated and paraformaldehyde is produced—consequently, a considerable quantity of the available formic aldehyd is blown into the room in the polymerized state. A piece of paper placed at the foot of the door through which the gases were being blown gathered a considerable quantity of paraform which had dripped from the end of the tube in the keyhole.

In the experiments, which were conducted under the supervision of the agent for the apparatus, six ounces (187.5 cc.) of the formalin were used for every 1,000 cubic feet of space, and the rooms were kept closed five hours. Agar streak cultures of the diphtheria bacillus and of the *B. prodigiosus* were exposed in the rooms in tubes, open and plugged, covered and uncovered, and at different heights. In closing his report, which is accompanied by a detailed table, Dr. Gehrmann says: "We may, in general, say that the freely exposed specimens were killed. The germicidal effect was, however more marked in specimens nearest the floor. Those which were covered with one or more folds of a sheet, or placed under pillows, or in plugged tubes, were not always killed.

"We were not able, in the five hours' exposure, to obtain any greater efficiency than with other methods of vaporizing formaldehyde solution under pressure, or of producing formaldehyde gas by the oxidation of methyl alcohol."

Fully as good, if not better, results have been obtained in a number of disinfections during the month, made person-

ally by Dr. C. W. Belim, Medical Officer in charge of the Disinfecting Corps. In these disinfections formalin was also used, but without the use of any apparatus. Ordinary bed sheets were employed to secure an adequate evaporating surface, and these, suspended in the room, were simply sprayed with the 40 per cent. solution through a common watering-pot rose-head. A sheet of the usual size and quality will carry from 150 to 180 cc. of the solution without dripping, and this quantity has been found sufficient for the efficient disinfection of 1,000 cubic feet of space. Of course, the sheets may be multiplied to any necessary number.

Cultures, both moist and dry, were exposed for five hours in these experiments, some in sealed envelopes and others wrapped in three thicknesses of sheets or folded inside of woolen blankets. Of the former none showed growth after 72 hours' incubation, while the growth was but slight in those wrapped in the blankets. Surface disinfection was thorough, while a much greater degree of penetration was shown in these experiments than that secured by any other method.

The evolution of the gas from the sprinkled sheets is exceedingly rapid—so much so that it behooves the operator to vacate the room within a very few seconds; while, after starting the ordinary generator, he may remain ten minutes or more without serious inconvenience. When the room is opened after five hours the density of the gas is still so great as to preclude respiration until after doors and windows have been opened some little time. On the other hand, the air is respirable within a very few minutes after the sheet has been removed, and there is no lingering smell of formaldehyde for days after, as is the case where the gas is evolved by the action of heat. This is due to the fact that a minimum of paraform is produced in the evaporation of

the solution in this manner at the ordinary temperature, and this is retained in the meshes of the fabric, instead of being precipitated on surfaces, to be slowly converted into the gaseous form through several days.

If further experiments, which are now being prosecuted by the Department, shall confirm the results thus far obtained, the problem of practical domestic disinfection by formaldehyde would seem to be in a fair way to be solved.—*March Report Department of Health City of Chicago.*

WATER.

BY H. C. WOOD, M. D., PHILADELPHIA.

Many European physicians believe that the most active cause of gastro-intestinal disturbance in America is the habitual use of ice water, and there can be no doubt that flooding the stomach with large quantities of ice water during eating has a tendency, by lowering temporarily the temperature of the viscus, as well as by diluting the gastric juice, to cause disturbances of digestion, which, on repetition, may result in the production of gastric catarrh. On the other hand, the habitual taking of large amounts of water is very advantageous for all gouty individuals, and indeed for all persons who eat more than the needs of the system require, in which latter class is included practically the whole of the American people.

It would seem *a priori*, probable, that in its relations with water the human system obeys to a greater or less extent the ordinary physical and chemical laws. What is taken into the body must get out of the body, sooner or later; and the discharge of large quantities of water necessarily increases the flow of secretion. The old researches of Roux and of Boecker indicated that the increase of the amount of urine which follows the water drinking is sometimes, but not always, accompanied

by an increase in the output of solids from the kidneys. The cause of the differences of effects has been shown by Meyer to depend upon the condition of the body; the excess of water in the system appears to have very little influence upon tissue disintegration, but to be powerful in dissolving and carrying off—in other words, in washing out—all excrementitious materials, whether such materials be due to disintegration of the tissues themselves or be educts from an excessive food supply.

The American habit of drinking water has not, however, arisen from the promptings of any blind instinct leading the race to attempt to wash out of the body the products of excessive self-indulgence, or the last taint of a gouty ancestry, but has simply sprung from the climatic condition. The dry air (as compared with Europe) and the high temperature of the summer months make the American throw off water and make the system demand water. The vacuum in the body must be supplied. That the American people do not drink more water than they need is shown by the fact that the American man is a drier individual, not only in his speech but also in his tissues, than is the European. True humor consists of a kernel of truth surrounded by a hull grotesquely unfit for it; and so the humorist habitually expresses a physiological fact when he makes John Bull in the cartoon plump and succulent, and Brother Jonathan hard and dry. Many years ago the writer at a meeting of the physiological sections of an International Congress, said that a certain physiological operation or procedure reported by European physiologists did not produce the results upon dogs which were alleged, unless indeed the European canines were very different from his American brothers, a suggestion which led to a general titter until Brown-Sequard got upon his feet and said that he had studied and practiced vivisection on

the two continents, and that it was a fact that the American people and the American dogs and lower animals were distinctly different in vascularity from their respective kindreds in Europe; that operations in vivisection which in Europe he could scarcely perform on account of the amount of bleeding produced, he had done on the American dog with almost dry tissues.

The American drinks water because he is thirsty; he is thirsty because he sweats; and he wants his water cold because he is hot; the cooling of the system being demanded, but the cool temperature being especially grateful to a heated throat. What is the poor American to do? He is threatened with mummification if he does not drink water; he is appalled by the horrors of gastric catarrh if he does drink water. The answer is obvious; drink water between meals rather than at meals. The drier the meals the less dilute the gastric juice, the better theoretically at least is the digestion. Fortunately the ordinary human being is made with a reserve force, and so if he be in the ordinary condition he need not study the number of drops of water he takes with his meal; but if he have any disease of the stomach or feebleness of digestion it is well worth while to count the drops.

Cold water has so good a taste when a man is very heated that most people will continue to take cold water, and a general chilling of the body would seem sometimes to be of service. Nevertheless, there probably are cases in which the sudden pouring of large masses of cold water upon a stomach in a person who has little reserve power has produced an immediate violent disturbance. These cases are, however, in our opinion, few; indeed, our belief in their existence may be due to the nursery teachings of our early childhood, since if the truth must be spoken, in a medical experience extending over thirty-five years, we have never seen colic, col-

lapse, or any other acute symptom or condition produced by a cold drink. But for fear that the nursery bogie is the shadow of a truth we would advise our readers when hot to drink cold water slowly. We remember once, when two thirds dead of thirst in the Texan desert, with what joy we raised to our lips a quart mug of water and drank it to the bottom without a breath, but in an ordinary emergency a half tumblerful of water, followed in a moment or two (if it must be) by the other half tumblerful of water, should satisfy the ordinary individual.—*American Medico-Surg. Bulletin*.

PHYSICAL EFFECTS OF ATTENDING SCHOOL.

In what way the bodily development of children is affected by their attendance at school has been closely investigated for years by Dr. Schmidt-Mounard, of Leipzig, who recently gave his results in an address to the Lehrer-Verein of that city. His results are as follows:

1. It is a difficult task to trace with accuracy what effect attending school has on the growth of children and on their increase of weight; but it is a fact demonstrated beyond reasonable doubt that children in the first year of school attendance gain less in weight and height than they do in preceding years, namely, only one kilogram (two and one-fifth pounds) in weight compared with four in early years, and five centimeters (two inches) in height compared with seven before; and that the average proportions in this respect are not again attained until in later years; and, further, that children who do not enter school until their seventh year are stronger and better developed physically than those who enter a year earlier.

2. Acute sicknesses are not caused by the fact that children must study, but are

produced by defective hygienic school-rooms. Lack of cleanliness, of fresh air and light, decrease the ability of children to resist the attacks of contagious diseases. This, too, becomes better in later years.

3. Chronic troubles, such as weakness, headaches, insomnia, and nervous disorders in general, are found to a much greater degree in schools of higher grade than in the elementary. They increase steadily in the case of girls to the age of puberty, frequently troubling as many as fifty per cent., while in the case of boys the highest percentage is thirty-five per cent. After that age, in consequence of the increase of weight, they decrease to twenty-seven per cent. in the case of girls. Eight per cent. of children about this age suffer from insomnia caused chiefly by social excitement at home. In the higher grade of schools for boys, especially when there are no afternoon recitations and the pupils are compelled to take exercise, the percentage of sickness varies from twenty to thirty-nine; while in the case of those schools where there are afternoon recitations and no enforced exercise, the percentage runs up as high as seventy-nine. Eighteen per cent. of boys in such schools complained of insomnia.

4. The cause of these troubles is to be found largely in the extra work assigned to children at home, such as drawing, lessons, music lessons, and the like, as also to the fact that in schools physical exercise is not made compulsory, as it should be.

The speaker closed his address with these words: "The children are not too weak for our schools, and for that reason should not cease to attend; but, rather, our schools make too heavy demands on the children, and for that reason these demands should be made lighter."—*The Literary Digest*.

BRAIN FATIGUE IN SCHOOL WORK.

A question of interest to teachers is raised by a recent paper by Dr. Kemsies, the headmaster of a large German school, who gives his personal experience of the conditions which influence the working capacity of his pupils. We quote from an abstract of his article in *The Hospital*: "The best work, he says, is done at the beginning of the week, after the Sunday holiday; and by Tuesday afternoon it has already begun to deteriorate. Again, the mornings produce the best work, and the midday rest, during which the midday meal is taken, does not produce the same recuperation as the night's rest. If these results are to be taken as correct, it would seem as if many of our educational customs might be reformed with considerable advantage. We have long thought that a reversion to the two half-holidays would be a great advantage to the children, however much the teachers might dislike it, and these investigations only tend to confirm our idea. Young ladies, again, used to go to school in the morning and the afternoon, with a two hours' interval between the two sessions. But now it is thought desirable, we suppose, that they should be free to pay calls with their mothers in the afternoons, and everything is crowded into one long grind of four hours in the morning. Moreover, a modern blackboard lesson is a very different thing from the work that used to be done in school hours, much of which would now be called preparation; and, although as a means of teaching facts its value is obvious, so also is its power of producing fatigue. Curiously enough, the German experience is that gymnastics, which we are apt to class with play, produce the greatest fatigue of all, rendering the work done after it practically useless. But, then, the gymnastics are probably done in a class, each pupil hav-

ing to do as he is told. This is practically another lesson, and is not to be put into the same category with half an hour in a five-court, or at football. It must not be forgotten that the effort to make teaching interesting, which is its great characteristic in modern times, does not really lighten the burden on the child. It makes learning easier, but it makes him learn more; it keeps him always at it, and it steals from him those moments of torpor and stupidity, of dreams and vacancy, in which his little brain used to take furtive snatches of repose."—*The Literary Digest*.

OTTOMAN STATISTICS.

The Bureau of Statistics of Paris induced the French Government to exchange statistical matters with the Turkish Government. Both governments consented, and the French Bureau of Statistics has sent blanks to be filled out and they have been handed by the French Ambassador to the Turkish authorities. The Parisian Bureau has sent six blanks. The questions to be answered have been the following:

1. What is the rate of deaths of the city?
2. What is the rate of births?
3. What is the supply of drinking water?
4. How much goods are imported?
5. How much goods are exported?
6. General remarks pertaining to the welfare and health of the people.

One blank came back filled out by the Chief Magistrate of the city of Damascus. The blank has been filled out thus:

Answer to 1. In Damascus everybody must die on the command of Allah. Some die young, some die old, but everyone must die.

2. I cannot answer answer this question. Allah alone knows that.

3. Since time immemorial nobody died

of want of water in the city of Damascus.

4 and 5. I never cared of my neighbor's business, and I cannot say how many camel loads are brought to or sent from Damascus.

6. Since Allah has sent his prophet, Mohammed, into the world, who has cleansed the world with fire and sword, things are little better, but there is much to be done yet, and much room for improvement.

And now my sweet lamb, do not ask any more questions, which are neither good for you or anybody else. This is the first and last blank I filled out for you.

SALAM ALEIKUM.

—*Public Health Journal*.

REVIEW OF DISEASES FOR MARCH. 1898.

(SEVENTY-EIGHT COUNTIES REPORTING.)

Eighty-one counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of February the following diseases have been reported from the counties named:

MEASLES.—Alexander, 2; Beaufort, 150; Caldwell, 20; Catawba, abundant; Chatham, 20; Chowan, 25; Davie, many; Franklin; Iredell, a few; Jackson, 2; Johnston; Mecklenburg; Northampton, numerous; Person, 1; Pitt, many; Rockingham, in all parts; Rowan, 3; Stokes, 25, in all parts; Surry, a few, epidemic abating; Transylvania; Wake, 6; Warren; Watauga, 10; Wayne, 1; Wilkes, 43; Wilson, 100; Yadkin, 12. 27 counties.

MUMPS.—Clay; Macon; Sampson; Wayne.

WHOOPING-COUGH.—Chatham, 6; Davidson, in all parts; Granville; Greene, 10; Jackson, 6; Martin, 10; Montgomery, 30; Onslow, 5; Robeson, in all parts; Rockingham, in all parts; Rowan, 2; Wake, 1; Warren; Washington, 25, in all parts; Wilkes, 35; Yadkin, 16 counties.

SCARLATINA.—Buncombe, quarantined, recovered; Cumberland, 1; Halifax, 1; Moore, 1; Northampton, 4.

DIPHTHERIA.—Jackson, 2; Wake, 1; Watauga, 5; Wilkes, 5.

TYPHOID FEVER.—Beaufort, 2; Craven; Jackson, 4; Johnston, 2; Mitchell, 4; New Hanover, 2; Pitt; Rowan, 1; Sampson, 2; Surry, 1; Swain, 2; Yancey, a few. 12 counties.

MALARIAL FEVER.—Chatham, 1; Chowan; Columbus; Gaston, 1; New Hanover, in all parts; Onslow; Person; Rowan, Sampson; Wilkes. 10 counties.

MALARIAL FEVER, PERNICIOUS.—Wilkes.

MALARIAL FEVER, HEMORRHAGIC.—Chowan, 1; New Hanover, 1; Onslow, 1.

SMALLPOX.—Clay, 1; Rowan, 1.

DIARRHOEAL DISEASES.—Mitchell, Onslow.

INFLUENZA.—Alamance; Caldwell, in all parts; Cleveland; Craven; Greene; Henderson; New Hanover; Union; Vance; Yancey. 10 counties.

PLEURISY.—Martin.

PNEUMONIA.—Alamance; Catawba; Cleveland; Craven; Gaston; Iredell; Lincoln; Martin; Onslow; Pasquotank; Rockingham; Transylvania; Union; Vance; Washington; Watauga; Yadkin. 17 counties.

RHEUMATISM.—Lincoln.

ROTHELN.—Sampson.

DISTEMPER, IN HORSES.—Clay, Jackson; Moore.

No diseases of importance are reported from, Ashe, Bertie, Bladen, Burke, Cabarrus, Carteret, Duplin, Durham, Edgecombe, Forsyth, Guilford, Haywood, McDowell, Madison, Mecklenburg, Orange, Pender, Polk, Randolph, Richmond and Rutherford.

No reports have been received from Anson, Hertford and Perquimans.

Summary of Mortuary Reports for March, 1898 (Twenty-two Towns).

Only those towns from which certified reports are received are included:

	<i>White, Col'd, Total.</i>		
Aggregate population . . .	66,639	53,321	119,960
Aggregate deaths . . .	61	73	134
Representing temporary annual death rate per 1,000	11.0	16.4	13.4
<i>Causes of Death.</i>			
Typhoid fever . . .	3	1	4
Malarial Fever . . .	1	0	1
Pneumonia . . .	7	10	17
Consumption . . .	10	19	29
Brain diseases . . .	3	1	4
Heart diseases . . .	8	5	13
Neurotic diseases . . .	2	0	2
Diarrheal diseases . . .	1	2	3
All other diseases . . .	23	33	56
Accident	3	2	5
	61	73	134
Deaths under five years	10	21	31
Still-born	3	9	12

Mortuary Report for March, 1898.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-Cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhical Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS.			
		By Races.	Total.	By Races.	Total.																	By Races.	By Towns.	Deaths Under 5 Years.	Still-born.
ASHEVILLE	W.	8,000	13,000	9.0	11.1	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	..	6	12*	..	..
Dr. M. H. Fletcher.	C.	5,000	..	14.4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
DURHAM	W.	4,000	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Dr. J. M. Manning.	C.	2,000	6,000	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
FAYETTEVILLE	W.	3,500	6,000	6.8	6.0	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Dr. J. V. McGowan.	C.	2,500	..	4.8	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
GOLDSBORO	W.	3,700	5,700	6.5	10.5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
T. H. Bain, Sec. B. H.	C.	2,000	..	18.0	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
HENDERSON	W.	2,250	4,250	5.3	11.3	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Dr. F. R. Harris.	C.	2,000	..	18.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
HILLSBORO	W.	700	1,000	0.0	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dr. C. D. Jones.	C.	300	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
LENOIR	W.	900	1,200	13.3	10.0	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Dr. A. A. Kent.	C.	300	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
MARION	W.	750	1,000	0.0	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dr. B. A. Cheek.	C.	250	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
MONROE	W.	1,800	2,400	6.7	10.0	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dr. J. M. Blair.	C.	600	..	20.0	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
OXFORD	W.	1,200	2,300	20.0	15.6	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Dr. G. A. Coggeshall.	C.	1,100	..	10.9	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
RALEIGH	W.	8,500	16,000	7.0	8.2	..	..	1	..	..	..	..	2	1	1	1	..	..	..	..	..	..	..	..	..
T. P. Sale, Clerk B. H.	C.	7,500	..	9.6	..	..	..	..	..	..	..	1	1	1	1	..	..	3	..	..	..	..	..	..	..
ROCKINGHAM	W.	1,300	1,750	0.0	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Dr. W. M. Fowkes.	C.	450	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
ROCKY MOUNT	W.	1,600	2,600	7.5	4.6	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Dr. G. L. Wimberley.	C.	1,000	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
SALEM	W.	4,100	4,550	5.9	5.3	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..
S. C. Butner, Mayor.	C.	450	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
SALISBURY	W.	4,000	6,000	6.0	12.0	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..
Dr. John Whitehead.	C.	2,000	..	24.0	..	..	..	..	..	..	..	1	2	..	..	..	..	1	..	..	..	..	..	..	..
SCOTLAND NECK	W.	775	1,200	15.5	10.0	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
J. A. Perry, Mayor.	C.	425	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
TARBORO	W.	1,200	2,500	50.0	33.6	..	..	..	..	..	..	..	1	1	..	..	..	3	..	..	..	..	..	..	..
Dr. L. L. Staton.	C.	1,300	..	18.5	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
WARRENTON	W.	964	1,760	13.9	6.8	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Dr. P. J. Macon.	C.	796	..	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
WASHINGTON	W.	3,000	5,500	32.0	28.4	..	..	..	..	..	..	1	1	..	1	1	3	1	..	..	..	..	..	..	..
Dr. D. T. Tayloe.	C.	2,500	..	24.0	..	..	..	..	..	..	..	1	1	..	..	..	3	..	..	..	..	..	..	..	..
WELDON	W.	700	1,450	0.0	8.3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
J. T. Gooch, Mayor.	C.	750	..	16.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..
WILMINGTON	W.	10,000	25,000	15.6	17.8	..	..	..	..	..	..	2	1	2	..	..	8	..	..	..	..	..	..	..	..
Dr. W. D. McMillan.	C.	15,000	..	2.0	..	..	..	..	..	..	..	2	9	..	..	1	13	..	..	..	..	..	..	..	..
WILSON	W.	2,500	4,500	14.4	12.5	1	..	..	..	..	..	1	1	1	..	..	..	..	..	..	..	..	..	..	..
Dr. N. Anderson.	C.	2,300	..	10.4	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
WINSTON	W.	5,200	10,000	9.2	21.6	1	..	..	..	..	..	3	..	2	..	..	..	..	1	..	..	..	..	..	..
Dr. John Bynum.	C.	4,800	..	35.0	..	..	..	..	..	..	..	3	3	..	..	..	5	1	..	..	..	..	..	..	..

N. B.—The reporters for the cities and towns printed in **BLACK TYPE** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

*In addition, there were 9 deaths of visitors: 1 of pneumonia and 8 of consumption.

County Superintendents of Health.

Alamance	Dr. J. K. Stockard.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	No Board of Health.
Alleghany		Lenoir	Dr. James M. Parrott.
Anson	Dr. E. S. Ashe.	Lincoln	Dr. W. L. Crouse.
Ashe	Dr. J. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. D. T. Tayloe.	Macon	Dr. S. H. Lyle.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick		Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. I. Laxton.	Montgomery	Dr. A. F. Thompson.
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. H. B. Shields.
Caldwell	Dr. A. A. Kent.	Nash	Dr. J. J. Mann.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. F. L. Herman.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan	Dr. R. H. Winborne.	Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moyer.
Craven	Dr. L. Duffy.	Polk	Dr. C. J. Kenworthy.
Cumberland	Dr. J. Vance McGougan.	Randolph	Dr. T. T. Ferree.
Currituck	No Board of Health.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames.	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. John Whitehead.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCanless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	No Board of Health.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. A. G. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. John R. Moss.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. P. J. Macon.
Harnett	No Board of Health.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Councill.
Henderson	Dr. J. G. Waldrop.	Wayne	Dr. P. C. Hutton.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. M. Turner.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. William Self.	Yancey	Dr. J. L. Ray.

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your County on or before the third of each month, that he may use it in making his report to the Secretary of the State Board]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough _____ Typhoid Fever _____

Measles _____ Typhus Fever _____

Diphtheria _____ Yellow Fever _____

Scarlet Fever _____ Cholera _____

Pernicious Malarial Fever _____ Small-pox _____

Hemorrhagic Malarial Fever _____ Cerebro-spinal Meningitis _____

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks :

M. D.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, at Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.
S. WESTRAY BATTLE, M. D., Asheville.
W. H. HARRELL, M. D., Williamston.
JOHN WHITEHEAD, M. D., Salisbury.

C. J. O'HAGAN, M. D., Greenville.
J. D. SPICER, M. D., Goldsboro.
J. L. NICHOLSON, M. D., Richlands.
A. W. SHAFFER, SAN ENG., Raleigh.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIII

MAY, 1898.

NO. 13²

ANNUAL MEETING OF THE BOARD.

As required by law, the annual meeting of the Board was held at the same time and place as the State Medical Society, viz., Charlotte, May 3-4. Drs. O'Hagan, Battle, Nicholson, Colonel Shaffer and the Secretary were present. At the business meeting, on the 3rd, in the unavoidable absence of President Thomas, Dr. O'Hagan was elected President *pro tem*. In addition to the routine business, the report of the Engineer of the Board on the public water supplies of the State was read and discussed at considerable length. Upon the conclusion of the discussion the Secretary was ordered to devote one issue of THE BULLETIN to its publication, together with the chemical and bacteriological analyses of the samples sent in by him. It will appear next month.

An inspection of all the public institutions of the State, by committees to be appointed by the President, was ordered.

On Wednesday, as has been the custom for many years, the Board met in conjoint session with the State Medical Society, Dr. Battle in the chair.

The Secretary read his annual report.

The subject receiving the most attention in the discussions was vaccination, quite a number participating. In the course of it, Dr. Francis Duffy, President of the Society, described a device for dressing vaccinated arms, which struck us as being very practical and convenient—so much so that we feel it to be our duty to describe it for the benefit of our medical readers, as we hope they have much good vaccination work ahead of them. The device may be briefly described as follows: A piece of rubber adhesive plaster three or four inches wide and long enough to go about two-thirds around the vaccinated arm, with tapes attached to each end. The plaster is applied to the arm with its centre opposite the sore, the tapes hanging loose. At each end of the plaster a roll of absorbent cotton is laid on the skin in the line of the arm just at the attachment of the tapes, so as to lift them above the skin. The dressing is then applied, and the tapes tied over it to hold it in place. In each subsequent dressing the only thing to do is to untie the tapes, renew the dressing and re-tie them. Dr. Duffy stated that he had found it much more

satisfactory than the usual vaccination shields, and we could well believe him.

In connection with the subject of National Quarantine, the following resolution was unanimously adopted:

Resolved, That the North Carolina Board of Health and the Medical Society of the State of North Carolina, in conjoint session assembled, endorse the Caffery bill enlarging the powers of the U. S. Marine Hospital Service, and respectfully request our Senators and Representatives in Congress to support the same.

SMALL-POX IN NORTH CAROLINA.

Only one case has been reported in May up to date of this writing, 18th. This is a negro "missionary preacher" at Statesville. The notification, by telegraph, was received on the 17th, and no particulars as to isolation, vaccination, etc., have come to hand, but we feel assured that Superintendent Long will carefully look after these.

PRESIDENT DUFFY ON PUBLIC HYGIENE.

We take much pleasure in presenting to our readers that portion of the admirable presidential address of Dr. Francis Duffy, delivered at the recent meeting of the State Medical Society at Charlotte, relating to the public health. He says:

* * * * *

It may be like the re-threshing of old straw to refer to the importance of public hygiene, and the necessity of procuring legislation for the promotion of that object, but as that sort of straw has yielded so comparatively little of the grain which it is capable of producing, I am impressed that we should continue to thresh. As far as we are concerned, I do not feel that it is necessary to remind this body of these things, much less to offer instructions, but with the people in general, as well as their legal representatives, it is different. They have not yet found out the best way to spend their money with the medical profession to get the best returns. With them the time-honored function of the doctor is to ap-

ply remedies, to diseases, and according to the law of supply and demand, the physician usually equips himself for the performance of that function, and by solicitation and practice grows in that direction. It is not my purpose to derogate this part of the physician's work. The world would be much poorer without the legitimate use of opium, chloroform, cocaine, quinine, iodine, mercury and other remedies. If the evil is upon us, that which removes or mitigates it will continue to be appreciated and sought, but where cure can save its thousands, prevention can save its tens of thousands, and it is a crying necessity to-day that this fact receive both a theoretical and practical realization by the whole people.

Before we can hope to leaven the whole lump of the body politic, let the physician scrutinize himself and the field that he occupies, to see how far he is the exponent of the true science, or to what extent he typifies or justifies a recent cartoon that represents nature and disease in fierce combat, while the doctor comes up blind-folded, and with his cudgel strikes right and left, now striking the disease and now the patient.

The history of the application of therapeutic measures (drugs mainly) does much to justify this cartoon. It is not necessary to more than refer to the incantations and other absurdities of ignorance and superstition which were in keeping with the dark ages in which they were practiced. Within the memory of men of to-day, famishing fever patients have been deprived of water by their misguided attendants, who were governed by tradition and custom, rather than by the dictates of common sense and the unerring cravings of nature. Even the foul air of the patient's room was carefully confined by closing the doors and windows, and perhaps his strength still more reduced by copious blood-letting.

My mother related to me an experience in her early life. Her father, living on his plantation, was stricken with fever, and after some days or weeks of bleeding and famishing he died. A number of his negro slaves were also stricken and under the same management went the same way. One servant begged to be let alone and not subjected to the treatment. His wishes were gratified and he alone recovered. I remember the old man well. He lived to advanced age.

Homeopathy and a number of other pathies, in spite of their absurdities, had fruitful soil in which to grow. They were less aggressive on the persons of the suffering sick, and if they gave no aid, were not so likely to hinder natural recoveries, and so the regular profession looked on, learning from experience, grew in knowledge, by its natural evolution, and became wiser than their critics. But the medical millenium has not yet come, nor are the days of mal-practice past. Even among operative procedures, the fads of gynecologists and the exploits of those seeking fame by startling measures in other fields require constantly to be challenged, to show cause why they should not be discontinued. If the novice takes up an optimistic modern work on *materia medica*, and studies the physiological effect of drugs and their therapeutic application, he might easily be impressed with the belief that drugs could control every pathological process, and remove every morbid condition. Coupled with these studies, he is very much surprised to find that works on practice of medicine (perhaps especially those of the scientific Germans) will give exhaustive descriptions of disease, pathology, etiology, clinical history, diagnosis and prognosis, but beyond general reference to hygiene, nothing specific as to the treatment. The fact of the limited power of drugs to work beneficial changes begins to dawn upon him, and that even those that are of undoubted value are like edged tools, and require careful handling. Even our comparatively harmless quinine, which so effectually destroys the malarial plasmodium, has been made to do its share of harm. On no less authority than the German professor, Leibermeister, 40 grains at a dose have been given to typhoid patients. Within recent years the coal tar antipyretics were hailed with delight. Fever killers had come at last! A Baltimore professor told his class that antipyrine was what he had been praying for. I think you will agree with me that more patients than fevers have been killed by them; and these remedies are in rather common use among the laity.

Not many days ago I visited a child to whom the mother had administered a dose of acetanilid before the cold stage of an intermittent fever had disappeared. Alarming symptoms followed. Another

case came under my notice, where a farmer had administered a dose of acetanilid under similar circumstances. The child died, apparently from its effects.

Not many years ago, the doctrine was promulgated that disease, a condition of lowered vitality, required to be combated by copious administration of alcoholics. This fascinating theory had many adherents and did much harm. In the field of dietetics, we went from starvation to stuffing. Even to-day an American text-book advises that a typhoid fever patient may take as much as six quarts of milk a day, a quantity that has been shown by physiological experiment to be one-third more than the full digestive capacity of a healthy man, eating nothing else and digesting all the day. We have no infallible guides. Our reason must challenge every theory, and our experience prove all things, and hold fast to that which is good.

But why this arraignment of a profession, which in the matter of education, conscientiousness and faithfulness compares favorably with any on earth. It is to lament that our most uncertain and dangerous functions are most in demand; that millions of dollars are paid by the people for the practice of medicine as it is being done, and as to some little extent has been indicated in the foregoing pages, while our best functions or capabilities are dwarfed by disuse and neglect. The public health officer would have to be a missionary at his own expense, while a premium is put on disease. This is not a mere perverse and unnatural choice of the people. They are as wise as we are, and will seek their own good as they conceive it to be. We are of them, and differ only as regards these matters in knowledge.

If they, the masses of the people, knew as much of the sources of the disease as the educated better element of physicians, who do you suppose would be in the van of the procession to stamp it out? The man who reaps a harvest when disease runs riot, or the man who pays the bill? That the people should become possessed of this knowledge is the prime requisite, for should we obtain such legislation as in our judgment was all that was necessary and such appropriations as would leave our Board of Health unhampered in discharge of their functions, the laws would be largely inoperative if lacking in popular

sympathy and support; besides, many of these things would depend on habits of individuals, which legislation could not control. It is to be, then, chiefly a matter of education; and how to accomplish this, is the problem.

If the individual physician in his professional and social contact with his clients sows the seed, if our Boards of Health, local and State, continue and even improve upon their good work, and if our schools, from the lowest to the highest, teach the rudiments of the science of health, and unfold to the mind of the pupil the necessity of expert work in the prevention of disease, knowledge must grow. And if our State Society, in its organized capacity, with the courage of its convictions, does not hesitate to urge necessary legislation, they will have discharged their duty, and may soon accomplish much.

Typhoid fever, which is perhaps entirely ventable, causes the State the loss of many a victim and much treasure. Current knowledge or opinion ascribes its propagation almost entirely to intestinal discharges of the infected. Prevention would seem to be in easy reach, yet it goes on. Personal observation leads me to believe that disinfection of the dejections is not accomplished in one half the cases. Many cases of continued fever are not considered typhoid fever which are most likely of that nature. I will not discuss the subject, but pass it by with the recommendation that the dejections of all fever patients be disinfected. The public should be instructed to do so, even where physicians are not employed, as they often are not, and it may be a fit subject for compulsory legislation. Our Board of Health has done a good service in the matter of prevention of malarial fevers by use of deep well and cistern water. But a properly managed cistern is an exception. Infectious germs are carried from the atmosphere or house-tops to the cistern. Filters, often imperfect, remain unchanged until oversaturated. They become thus the source of infection. Tuberculosis continues to be propagated by the expectoration of the infected without hindrance, except perhaps in one municipality in the State. Milk is sold from any kind of cow which will afford it. Diseased meats are sold in the markets. Ice is imported from impure sources and people believe that

freezing purifies it, which is true only to a limited extent, and may be manufactured from impure water. Any kind of canned food is sold that any one will buy. There is no check on adulteration or fraud as to what the people eat or drink or take as medicines, patent or proprietary, save their own unskilled judgment, warped or blinded by alluring advertisements and unblushing false assertions.

The physician often finds that a patient unable to pay him has raked up money enough to pay an exorbitant price for worthless medicines or appliances. Drug-gists practise medicine. Spectacle vendors, ignorant or unscrupulous, still practice this branch of the medical art, though a medical college graduate has first to pass our State Board. Dangerous drug habits or other evil consequences arise from headache cures and the like. Beverages (coca cola for instance) sold from the soda fountains should be subject to analysis and the people advised, or the sale interdicted if necessary. I refrain from further specific references.

The doctor of the future will probably differ more widely from the one of to-day than the doctor of to-day differs from the one of the past. We know something of him of the past and the present, and that the tares have been mixed with the wheat in varying proportions. With prophetic eye we may contemplate him of the future, but we know not how far distant, or how near at hand. The poet or philosopher may by inspiration point the way, the scientist by experimental research may demonstrate, still events occur only in the fulness of time or that period in the evolution of the human race under the sovereignty of God when it is possible to achieve that which before was not attainable, but the sword of the doctor (his weapons of warfare on disease or the diseased) will be changed to the pruning-hook, which cuts away the poisonous branches upon which grow the deadly fruit.

In the propagation of the race, in the construction of human habitations, in clothing and in food, in labor and in recreation there is a rational wisdom, and in connection with these there should be skilled advisers. If physic should be thrown to the dogs, will the doctor's occupation be gone? Not when he has proper surveillance over everything that

affects the health of the people. In his present status of equipment he could do much more than he does or is permitted to do, but when the new order of things creates the demand, medical colleges will not condone ignorance of chemistry and physics, even as now imperfectly taught, nor make side-shows of the microscope and laboratory. These stones, which are well nigh rejected by the builders of medical education, will become the heads of the corner. These things will be *sine qua non*.

North Carolina has been called the Rip Van Winkle of States; still she has been known to arouse from her lethargy. In the matter of legislation regulating the practice of medicine, she was (through the influence of our Society) in the van of the procession. And in this historic city (Mecklenburg County), May 20th, 1775, she sounded the bugle call as a pioneer of liberty. It is fitting that we should here resolve to push still further the lines of human progress.

REVIEW OF DISEASES FOR APRIL, 1898.

(SEVENTY-SEVEN COUNTIES REPORTING.)

Eighty-one counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of April the following diseases have been reported from the counties named:

Measles—Alamance; Alexander, 1; Beaufort, in all parts (100); Bertie; Buncombe, 1; Catawba, many; Chowan, epidemic; Franklin, many; Haywood, 5; Johnston; Lincoln, 3; Martin, 2; Montgomery, 10; Pitt, widely prevalent in

southern part; Randolph, 10; Robeson; Rockingham, in all parts; Stokes, in all parts. Wake, 19; Warren, several; Washington, 2; Wilkes, 25; Wilson, 5; Yadkin, 2; Yancey, a few—25 counties.

Mumps—Alamance; Jackson; Macon; Mecklenburg; Union.

Whooping-cough—Chowan, epidemic; Durham, 1; Granville; Greene, 50; Jackson, 10; Mitchell, 40; Montgomery, 50; New Hanover, 1; Onslow, 10; Randolph, 20; Robeson; Warren, several; Washington, 70; Wayne, epidemic; Wilkes, 15; Yadkin, 12—16 counties.

Scarlatina—Buncombe, 1; mild, quarantined, recovered; Cumberland, 5; Richmond, 3.

Diphtheria—Jackson, 8.

Typhoid Fever—Alexander, 1; Beaufort, 3; Catawba, 2; Davidson, 1; Pitt, Randolph; Robeson; Rowan; Sampson, a few; Swain, 3; Union, 12—11 counties.

Malarial Fever—Columbus; Gaston, 2; Sampson; Wilson.

Small-pox—Buncombe, 2.

Influenza—Mecklenburg; Transylvania.

Pneumonia—Mecklenburg; Orange; Perquimans; Rutherford; Transylvania; Warren, Yadkin—7 counties.

Diarrhwal Diseases—Cleveland; Gaston; Hertford; Nash; Rutherford; Sampson.

Varicella—Greene; Mecklenburg and Wake.

Distemper in Horses—Lincoln.

Cholera in Hogs—Hertford; Macon.

No diseases of importance are reported from Bladen, Burke, Cabarrus, Caldwell, Cartaret, Chatham, Cherokee, Clay, Edgecombe, Forsyth, Gates, Halifax, Henderson, Iredell, McDowell, Madison, New Hanover, Pasquotank, Pender, Perason, Polk, Surry and Watauga.

No reports have been received from Anson, Craven, Duplin and Vance.

**Summary of Mortuary Reports for April.
1898 (Twenty-three Towns).**

Only those towns from which certified reports are received are included:

White. Col'd. Total.

Aggregate popula- tion	72,439	55,821	128,260
Aggregate deaths . .	48	81	129
Representing tem- porary annual death rate per 1,000	7.9	15.6	12.1

Causes of Death.

Typhoid fever. . . .	2	0	2
Malarial Fever. . . .	1	1	2
Whooping-cough. . .	0	2	2
Measles.	0	1	1
Pneumonia	6	5	11
Consumption	9	19	28
Brain diseases. . . .	7	2	9
Heart diseases	2	5	7
Diarrheal diseases . .	6	0	6
All other diseases . .	15	42	57
Accident	0	4	4
	<hr/> 48	<hr/> 81	<hr/> 129
Deaths under five years	15	24	39
Still-born.	1	19	20

Mortuary Report for April, 1898.

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEMPO- RARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-Cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhœal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	By Races.	By Towns.	TOTAL DEATHS. Deaths Under 5 Years.	SUM- born.
		By Races.	Total.	By Races.	Total.																				
ASHEVILLE	W.	8,000	13,000	1.5	12.0	...	...	...	...	...	...	2	1	...	...	...	...	4	...	...	...	1	13	12	1
Dr. M. H. Fletcher.	C.	5,000		24.0		...	...	...	...	...	...	2	3	...	...	...	...	1	...	...	...	1	13	12	1
DURHAM	W.	4,600	6,000	12.0	12.0	...	...	...	...	...	...	1	2	...	...	...	...	1	...	...	...	4	6	1	...
Dr. J. M. Manning.	C.	2,000		1.0		...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	4	1	...
FAYETTEVILLE	W.	3,500	6,000	3.4	18.0	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	9	1	...
Dr. J. V. McGougan.	C.	2,500		38.4		...	...	1	...	...	...	3	1	...	...	...	...	2	1	...	...	2	9	1	...
GREENSBORO	W.	5,500	8,000	1.4	9.0	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	1	6	1	5
J. S. Michaux, City Clk.	C.	2,500		19.2		...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	2	6	1	5
HENDERSON	W.	2,250	4,250	5.3	2.8	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	1	...	...
Dr. F. R. Harris.	C.	2,000		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	...	1
HILLSBORO	W.	700	1,000	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Dr. C. D. Jones.	C.	300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
LENOIR	W.	900	1,200	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Dr. A. A. Kent.	C.	300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
MARION	W.	750	1,000	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Dr. B. A. Cheek.	C.	250		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
MONROE	W.	1,800	2,400	13.3	15.0	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	2	3	...	...
Dr. J. M. Blair.	C.	600		20.0		...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	3	...	...
OXFORD	W.	1,200	2,300	0.0	5.2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	...	...
Dr. G. A. Coggeshall.	C.	1,100		10.9		...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	1	...	...
RALEIGH	W.	8,500	16,000	11.0	15.0	...	...	...	...	...	...	1	3	...	...	...	...	3	...	...	...	10	20	5	1
T. P. Sale, Clerk B. H.	C.	7,500		16.0		...	...	1	...	...	...	1	...	1	...	...	...	4	...	...	...	10	20	7	2
ROCKINGHAM	W.	1,300	1,750	18.5	20.6	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	1	3	...	...
Dr. W. M. Fowlkes.	C.	450		26.7		...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	3	...	...
ROCKY MOUNT	W.	1,600	2,600	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Dr. G. L. Wimberley.	C.	1,000		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
SALEM	W.	4,100	4,550	5.8	7.9	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	2	3	1	...
S. C. Butler, Mayor.	C.	450		26.7		...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	3	1	...
SALISBURY	W.	4,000	6,000	9.0	16.0	1	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	3	8	...	...
Dr. John Whitehead.	C.	2,000		30.0		...	...	...	...	...	...	1	1	...	...	...	...	3	...	...	...	5	8	2	...
SCOTLAND NECK	W.	775	1,200	0.0	10.0	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	0	1	...	...
J. A. Perry, Mayor.	C.	425		28.2		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	...	...
TARBORO	W.	1,200	2,500	10.0	1.8	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	1	...	...
Dr. L. L. Staton.	C.	1,300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	...	...
WARRENTON	W.	954	1,700	24.9	13.6	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	...	0	2	...	...
Dr. P. J. Macon.	C.	796		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	2	...	...
WASHINGTON	W.	3,000	5,500	12.0	13.1	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	...	3	6	3	...
Dr. D. T. Tayloe.	C.	2,500		11.4		...	...	...	...	...	...	1	...	...	...	...	...	2	...	...	...	3	6	3	...
WELDON	W.	700	1,150	0.0	8.3	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	0	1	...	...
J. T. Gooch, Mayor.	C.	750		16.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...
WILMINGTON	W.	10,000	25,000	3.6	11.0	...	...	...	...	...	...	1	...	...	...	...	...	2	...	...	...	3	23	6	6
Dr. W. D. McMillan.	C.	15,000		15.2		...	...	...	...	...	...	1	2	1	...	...	...	15	1	...	...	19	23	6	6
WILSON	W.	2,500	4,800	24.0	17.5	1	...	...	...	...	...	2	2	...	...	...	...	...	...	...	...	5	7	...	...
Dr. A. Anderson.	C.	2,300		10.1		...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	2	7	...	...
WINSTON	W.	5,200	10,000	9.2	18.0	...	...	...	...	...	...	1	1	1	...	...	...	1	...	...	...	1	15	3	...
Dr. John Bynum.	C.	4,800		27.5		...	...	...	...	...	...	2	4	...	...	...	...	4	1	...	...	11	15	2	4

N. B.—The reporters for the cities and towns printed in **BLACK TYPE** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

*In addition, there were 6 deaths from consumption, white, and 2 from Bright's disease, white, all, non-residents.

County Superintendents of Health.

Alamance	Dr. J. K. Stockard.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Anson	Dr. E. S. Ashe.	Lincoln	Dr. W. L. Crouse.
Ashe	Dr. L. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. D. T. Tayloe.	Macon	Dr. S. H. Lyle.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	Dr. A. F. Thompson.
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. H. B. Shields.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. F. L. Herman.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan	Dr. R. H. Winborne.	Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moye.
Craven	Dr. L. Duffy.	Polk	Dr. C. J. Kenworthy.
Cumberland	Dr. J. Vance McGougan.	Randolph	Dr. T. T. Ferree.
Currituck	No Board of Health.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames.	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. John Whitehead.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCanless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. John R. Moss.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. P. J. Macon.
Harnett	No Board of Health.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Councill.
Henderson	Dr. J. G. Waldrop.	Wayne	Dr. P. C. Hutton.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. M. Turner.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. William Self.	Yancey	Dr. J. L. Ray.

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your County on or before the third of each month, that he may use it in making his report to the Secretary of the State Board]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough _____	Typhoid Fever _____
Measles _____	Typhus Fever _____
Diphtheria _____	Yellow Fever _____
Scarlet Fever _____	Cholera _____
Pernicious Malarial Fever _____	Small-pox _____
Hemorrhagic Malarial Fever _____	Cerebro-spinal Meningitis _____

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks :

_____ M. D.



BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, at Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.
 S. WESTRAY BATTLE, M. D., Asheville.
 W. H. HARRELL, M. D., Williamston.
 JOHN WHITEHEAD, M. D., Salisbury.

C. J. O'HAGAN, M. D., Greenville.
 J. D. SPICER, M. D., Goldsboro.
 J. L. NICHOLSON, M. D., Richlands.
 A. W. SHAFFER, SAN ENG, Raleigh.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIII.

JUNE, 1898.

No. 3.

SMALLPOX IN NORTH CAROLINA.

Eleven cases reported in Statesville and Belmont, a suburb thereof. All isolated in pest hospital and eight about well. Another case reported as present at Vanderborg's Chapel. It is strictly quarantined.

There being a disposition on the part of the people to break over the quarantine, notwithstanding all the local physicians were agreed as to the diagnosis, the Superintendent of Health asked for an expert to be sent to back him up. In compliance therewith we requested Surgeon General Wyman, M. H. S., to send one. Dr Wertenbaker was sent, and reports to us that the outbreak is well managed by the local authorities.

YELLOW FEVER.

We regret to note the recent restricted outbreak of yellow fever in Mississippi. The fears that owing to the mild winter some of the germs of last summer might be brought over seem to have been realized. We shall watch the immediate future with anxiety, but trust that it can be kept within bounds.

THE PUBLIC WATER SUPPLIES OF THE STATE.

At the annual meeting of the Board at Morehead in June, 1897, "it was ordered that the municipal water supplies of the State be examined chemically and bacteriologically during the current year; and that the engineer of the Board be requested at his convenience to collect, pack and ship samples for the same, and at the same time to make an inspection and report on the various water works and water sheds." Col. Shaffer having carried out the above instructions, submitted his report to the recent meeting of the Board in Charlotte—the first since the completion of the work—and the Secretary was ordered to publish it in the BULLETIN.

It may be remembered by some of our readers that this work of systematically investigating all the public water supplies of the State was first undertaken in 1896, and was limited to simply an analysis of the water. While that examination was very incomplete, owing to the extremely small appropriation by the State, it undoubtedly had a good effect on the water companies. We are all more particular if

we know we are watched. Realizing this, the Board felt that some of its little money could not be put to a better use, and so the action indicated above was taken.

The reader will understand, of course, that we do not suppose that an annual inspection and analysis will make pure water, but it will make for purer water by causing the water companies themselves to take a more active interest in the matter. Neither would any number of analyses insure pure water, for the reason that it must be already infected before the pathogenic bacteria can be found. Frequent inspections of the water shed, however, and thorough filtration would be much more effective. It is far safer and easier to prevent disease germs from getting into the water than to get them out after they have taken possession. And inasmuch as a number of our supplies are taken from small streams whose restricted water sheds are inhabited, the danger of infection is much greater than where the origin of the supply is different. After a careful consideration of the matter, we have come to the conclusion that the best thing water companies obtaining their supply from such water sheds can do to insure the purity of their water, is to employ some reliable man whose sole duty it shall be to thoroughly patrol the water shed, going over it and visiting every residence thereon at least twice a week, and promptly reporting every case of fever or diarrhœal disease, that it may be immediately investigated and such precautions taken as may be necessary. We are glad to say that this suggestion made in a conversation with one of the owners has already been adopted by the Charlotte Water Company. If this thorough and continuous inspection should be supplemented by approved filtration, we believe that the danger of infection would be reduced to a practical minimum. It is apparent, we think, that it would be

clearly to the interest of the water companies, for the occurrence of typhoid fever traceable to their water would reduce their receipts far more than carrying out the above suggestion for a number of years. Besides, the effect of such careful protection of the water against infection would give confidence to the people, and would be immediately and continuously beneficial to their business.

The reader of the report will doubtless be struck with the high price charged for water, especially to small consumers, which, of course, includes all the poorer classes. In several instances a minimum consumption amounting to \$12 per annum is required, which is practically prohibitory to the poor. While no doubt some of the companies find it a hard matter to "make buckle and tongue meet," this should not be. We have no control over the price charged, but we feel it our duty to say that high-priced water is not in the interest of public health. Pure water in abundance, at a price within the reach of all, is one of the most powerful agencies for promoting the health of any community. It is for this reason that we believe so strongly in municipal ownership. We cannot expect those who have invested their money in such enterprises for the purpose of securing dividends to look at the matter from the eleemosynary point of view—they have a right both in law and equity to make such charges as will insure them a reasonable return on their investment. But when the water works are owned by the people as a whole the object of the management will not be dividends but health, comfort, beauty and safety from fire. The general tendency is towards municipal ownership, and we trust that it will spread in North Carolina. It pays. Wilson owns its own work and sells water at ten cents per 1,000 gallons at a profit.

It should be noted in connection with

the chemical analyses that where the albuminoid ammonia is too high, that it is nearly always due to vegetable matter in the stream in the form of leaves, etc., and that it is not dangerous in itself. In regard to the bacteriological tests, it should be said that while they are not as elaborate and complete as they might be, they are made by good men and are carried far enough to show whether or not there is reason to suspect the water of being infected.

In conclusion, we wish to put ourselves on record as favoring the use of public water supplies as against the water of wells, *provided* the companies will conscientiously use every reasonable effort to insure the purity of their supplies. The water of the public supply may sometimes be dangerous, but that from wells in closely-built cities and towns with surface privies, and more especially cess-pools, is much more apt to be so.

The chemical analyses were all made for us without charge by the N. C. Agricultural Experiment Station, and we desire to make our acknowledgments to Acting Director Withers for his valuable aid in this respect.

The comments on all chemical analyses are made by the chemist.

REPORT OF COL. A. W. SHAFFER, ENGINEER OF THE BOARD.

GOLDSBORO, August 3. 1897.

One sample taken from intake on Little river at the power house, and one from the tap in front of Hotel Kennon, on Railroad street, both for bacteriological analysis, taken, packed and delivered to Dr. Anderson, of Wilson, in his presence. Samples for chemical analysis have been since procured by yourself.

This visit to Goldsboro has been fully reported heretofore.

The following is the report referred to:

"I reached the city about noon, and

was glad to find awaiting me, the President, Dr. Geo. G. Thomas, and the Biologist, Dr. Anderson, Drs. Spicer and Hill conferring with us cordially.

We visited the water works on Little river in company with the mayor, and found the works small, but filter working well, and supply tinted with the juniper and cypress, through which it passes, but clear, and free from green scum, bad odor or taste, which had been reported to exist there. We took samples from the intake and returned to the city; took another from the tap in front of Dr. Hill's drug store, in the hotel building, and Dr. Anderson packed both in ice and carried them with him that night to Wilson.

Through the courtesy of the mayor we were enabled to ride over the town and view its water-shed and drainage. We found no sewers, but we never saw a town so well adapted by nature for efficient sewerage at a moderate expense—say Waring's system. There is ample grade and fall in every direction, with no rock or hard subsoil to penetrate, and would discharge into Neuse river within a mile of the corporate limits, two to three miles below the intake on Little river.

The water-bearing strata of Goldsboro lies barely ten feet below the surface, and in wet seasons the water in the wells rises to within four to six feet of the surface. The waste water of the town empties into shallow surface ditches, and is liable to percolate through the sandy crust to the wells, from which a large majority of the citizens of Goldsboro obtain their water for all purposes.

I think that so far as the health of the town is concerned, there is greater danger than with no water works, because of the lack of sewerage, to carry off the waste.

Briefly stated, Goldsboro is situated upon a plateau of open, sandy loam, elevated about twenty feet above, and distant

about one mile from Little river on the northwest, and Neuse river on the south. The water-bearing strata under the town averages eight to twelve feet below the surface, and there are localities in which the well water can be reached from the surface with a long-handled gourd. Having no sewers, the city is drained by shallow surface ditches, alternately wet and dry from atmospheric causes; always more or less charged with the waste and sewage of buildings, and the use of the street and lawn taps connecting with the river supply, the shallow wells being the common receptacle and reservoir of all.

If typhoid germs breed and multiply under these conditions, then Goldsboro is an ideal propagating ground, though the waters at the intake be as pure and limpid as those of Pison, Gihon or Hiddekel, that sprang from the garden of God.

Works belong to private parties, who sell water to small consumers at 40 cents per 1,000 meter gallons."

N. B.—Since the above report was made the people of Goldsboro have voted bonds for sewerage of the city.

CHEMICAL ANALYSIS.

Sample from Intake

Total solid matter

in solution.....	3.3	gr. per U.S. gal.
Hardness.....	1.4	deg. Clarke's sc.
Equiv. to cal. car.	0.33	gr. per U.S. gal.
Chlorine.....	0.33	gr. per U.S. gal.
Free ammonia.....	0.106	parts per mil.
Album'd ammonia.	0.170	parts per mil.

The chemical analysis indicates that this is not a good water for drinking purposes.

Sample from Faucet in City.

Total solid matter

in solution.....	3.3	gr. per U.S. gal.
Hardness.....	1.4	deg. Clarke's sc.
Equiv. to cal. car.	0.33	gr. per U.S. gal.
Chlorine.....	0.33	gr. per U.S. gal.
Free ammonia.....	0.043	parts per mil.
Album'd ammonia,	0.232	parts per mil.

The chemical analysis indicates that this is not a good water for drinking purposes.

BACTERIOLOGICAL EXAMINATION BY DR. ANDERSON.

One sample, unfiltered, was collected from the intake at the river. This showed 300 bacteria to the C. C. of benign form. The other sample, filtered, was collected from a faucet on Railroad street and this contained only 53 bacteria to the C. C. The last sample represents the water used by the city which is good.

WILSON, Nov. 8, 1897.

Two samples taken from tap in drug store adjoining Dr. Anderson on Main street—one delivered personally to Dr. Anderson and the other sent to Experiment Station at Raleigh.

Visited power-house, intake and watershed with Dr. Anderson. These are about a mile from town. The works have no filter and the town no sewerage. The intake is about one hundred yards from the works, on the run of Toisnot swamp, with a flow of water over the dam ten inches deep and twelve feet wide, clear, but full of floating leaves, and tinted slightly by decaying vegetation. The canal draining the swamp is about 1,000 feet in length, and the area of the swamp about one and a half square miles, with ever recurring living springs along its margin—a very slight run crossing the road a mile above the intake. If an open, dry ditch could be maintained around the margin of the swamp, the banks of the canal and the run of the swamp cleared—say twelve feet wide on each side—and the run of the swamp opened and kept clear from dead leaves, falling branches, trunks of rotten trees and water-grasses that obstruct the flow, they would have as near an ideal reservoir as swamp lands ever afford.

The works are owned and operated by

the town; sell water to small consumers at ten (10) cents per 1,000 meter gallons, and realize a profit upon the cost of plant and its operation.

CHEMICAL ANALYSIS.

Total solid matter		
in solution.....	3.33	gr. per U.S. gal.
Hardness.....	1.7	deg. Clarke's sc.
Equiv. to cal. car.	0.58	gr. per U.S. gal.
Chlorine.....	0.33	gr. per U.S. gal.
Free ammonia..	0.0449	parts per mil.
Album. ammonia	0.2155	parts per mil.

The high percentage of albuminoid ammonia indicates vegetable contamination.

BACTERIOLOGICAL EXAMINATION BY DR. ANDERSON.

The bacteriological examination of sample of water collected from the Wilson public water supply, November 10th 1897, showed 150 bacteria to the C. C. All tests used in making the examination showed the water good.

NEWBURN, Nov. 10, 1897.

Took two samples water from the running public hydrant at the corner of Main street, near the Hotel Chattawka; one sent to Dr. Anderson at Wilson, the other to Experiment Station at Raleigh. Water derived from six bored, or artesian wells; no water-shed or filter. Works owned and operated by private corporation, and water sold to small consumers at 50 cents per 1,000 meter gallons, with a minimum of 100 gallons per day.

CHEMICAL ANALYSIS.

Total solid mat-		
ter in solution,	10.25	gr. per U.S. gal.
Hardness.....	10.01	deg. Clarke's sc.
Equiv. to cal. car.	7.58	gr. per U.S. gal.
Chlorine.....	0.5	gr. per U.S. gal.
Free ammonia..	0.0100	parts per mil.
Alb. ammonia..	0.020	parts per mil.

There is no indication of organic contamination.

BACTERIOLOGICAL EXAMINATION BY DR. ANDERSON.

The sample of water received from the Newbern public water supply, November 10th, 1897, showed only 83 bacteria to the C. C. in making a bacteriological examination. All tests used show this water to be very good.

WILMINGTON, Nov. 11, 1897.

Took two samples water from tap in Mr. Munds' drug store on Main street; packed, addressed and deposited them in express office, and withdrew them after conference with and upon advice of the President of the Board, to be retaken upon the completion of the artesian well now boring upon the site of the powerhouse, or other production of acceptable water.

Owing to the liability of infection by the city sewage in the ebb and flow of the tide, it is earnestly recommended that the intake be removed above tide water in the event of the failure of the artesian well now boring.

The works are owned and operated by private parties, and the water is sold to small consumers at twenty cents per 1,000 meter gallons.

FAYETTEVILLE, Nov. 12, 1897.

Two samples of water taken from the running public hydrant at the corner of Hotel Lafayette on Main street. One to Dr. W. T. Pate, at Gibson Station, and the other to the Experiment Station at Raleigh.

This water is derived from the great spring on Haymount Hill, and used for drinking purposes chiefly. Other water is taken from the run of Cross Creek, used for general purposes, and for drinking where Haymount water cannot be obtained. No sample taken from Cross Creek water.

The works are owned and operated by

private parties, and the water sold to small consumers at twenty-five cents per 1,000 meter gallons, but not less than \$1 per month.

CHEMICAL ANALYSIS.

Total solid matter	
in solution	2.83 gr per U.S. gal.
Hardness	1.8 deg. Clarke's sc.
Equiv. to cal. car. 0.67	gr. per U.S. gal.
Chlorine	0.5 gr. per U.S. gal.
Free ammonia	0.061 parts per mil.
Alb. ammonia	0.0375 parts per mil.

The chemical examination shows no indication of organic contamination.

BACTERIOLOGICAL EXAMINATION BY DR. PATE.

The quantitative analysis gave 180 bacteria per cubic centimeter. The qualitative tests showed no suspicious organisms. Sample good.

ASHEVILLE, Nov. 19, 1897.

Two samples taken from tap in Asheville hotel. One to Dr. Albert Anderson, at Wilson, the other to the Experiment Station, Raleigh.

Through courtesy of Dr. Fletcher, visited the filter within the city, the stand-pipe and reservoir on Beaucatcher mountain, and the power-house and intake five miles out on the left bank of Swannanoa river. This is the best plant in the State. Four large filters are enclosed in brick walls; the reservoir is an abandoned rock quarry, cleaned out and cemented, safe against the intense cold that destroyed the stand-pipe a few years ago, and the power-house, dam and forebay are of solid rock masonry. The water is conducted to the city through two lines of pipes, one ten and the other sixteen inches in diameter, over two mountain spurs into the stand-pipe and the reservoir.

This most expensive of the municipal water works of the State is the property of the city of Asheville, selling its water

to small consumers at fifteen cents per 1,000 meter gallons, and supplying the street sprinkling, the sewer flushing, the public hydrants and the public fountains free.

The only settlement on this water-shed is at Black Mountain, sixteen miles away, and very small.

CHEMICAL ANALYSIS.

Total solid matter	
in solution	2.16 gr. per U.S. gal.
Hardness	1.4 deg. Clarke's sc.
Equiv. to cal. car. 0.33	gr. per U.S. gal.
Chlorine	0.16 gr. per U.S. gal.
Free ammonia	0.013 parts per mil.
Alb. ammonia	0.0325 parts per mil.

A very pure water.

BACTERIOLOGICAL EXAMINATION BY DR. ANDERSON.

The sample from the Asheville public water supply was received November 20, 1897. In the bacteriological analysis of this water no harmful bacteria were found.

CHARLOTTE, Nov. 22, 1897.

Took two samples water from the running tap at Van Ness' grocery on North Tryon street. One to Dr. W. T. Pate, Gibson Station, the other to Experiment Station, Raleigh.

By courtesy of Dr. Brevard, joint owner with Mr. Eli Springs, I visited the power-houses, reservoirs and part of the water-shed. The latter consists largely of cultivated land. Not a favorable water-shed for first-class water without thorough filtration. There are, however, four filters in use. The supply is derived from two streams. Both average about one and a half miles from the principal square in town at the intersection of Trade and Tryon streets. Both are conducted to a settling basin near the power-house, from which the water is conveyed to the filters.

This plant is owned and operated by private parties, and water is sold to small

consumers at fifty cents per 1,000 meter gallons. There exists an inchoate contract for the sale of the plant to the city.

NOTE.—The management proposes to reduce the rent to private consumers.

CHEMICAL ANALYSIS.

Total solid matter		
in solution.....	5.91	gr. per U.S. gal.
Hardness.....	3.8	deg. Clarke's sc.
Equiv. to cal. car.	2.33	gr. per U.S. gal.
Chlorine.....	0.416	gr. per U.S. gal.
Free ammonia...	0.36	parts per mil.
Alb. ammonia...	0.1877	parts per mil.

The chemical analysis indicates vegetable organic contamination.

BACTERIOLOGICAL EXAMINATION BY DR. PATE.

The quantitative examination gave 425 bacteria to the cubic centimeter. This sample forms gas in both glucose and lactose bouillon, but I did not succeed in isolating the fermenting bacteria.

SECOND BACTERIOLOGICAL EXAMINATION MADE FOR WATER COMPANY BY DR. PATE.

I have the honor to report as follows on sample of water sent me from the public water supply of Charlotte June 2, 1898:

Sample shipped without ice.

It is clear—no sediment.

Contains only 120 bacteria to the cubic centimeter of water. No fermentation in lactose or glucose bouillon, even after several days' growth.

This analysis indicates a safe drinking water.

CONCORD, Nov. 23, 1897.

Two samples of water taken from tap at Marsh's drug store in presence of Mayor Crowell—one to Dr. W. T. Pate at Gibson Station, the other to Experiment Station at Raleigh.

Visited power-houses (two—both inside city) with Mayor Crowell. The city is

built upon the crest of a long ridge, and the supply of one station is taken from the Reed Gold Mine shaft on one watershed, and the other from surface springs on the opposite side, both very exactly on the water-shed of the town. At the first I found a pond of perhaps an eighth of an acre, about a hundred feet above the shaft, the overflow passing the station within ten or twelve feet. On the other water-shed, directly opposite, was the other power-house, beside a walled and covered spring.

The power-house contained a small Worthington pumping engine, furnishing power to run the pump and the electric light plant of the town.

The Concord plant is owned and operated by a private party; has a stand-pipe, but no reservoir or filter, and the water is sold to small consumers at 50 cents per 1,000 meter gallons.

CHEMICAL ANALYSIS.

Total solid matter		
in solution.....	9.66	gr. per U.S. gal.
Hardness.....	6.1	deg. Clarke's sc.
Equiv. to cal. car.	4.25	gr. per U.S. gal.
Chlorine.....	1.16	gr. per U.S. gal.
Free ammonia...	0.0449	parts per mil.
Album. ammonia,	0.05	parts per mil.

The chemical analysis does not show any indications of organic contamination.

BACTERIOLOGICAL EXAMINATION BY DR. PATE.

The quantitative examination gave 350 bacteria to the C. C. This water ferments both glucose and lactose at 42 degrees in 36 hours. Quantity of bacteria low—quality suspicious.

SECOND INSPECTION.

CONCORD, May 5, 1898.

I have the honor to report that pursuant to the direction of the Board, made at Charlotte conference on the 4th inst, I visited Concord, N. C., and took new

samples of the municipal water, one for the North Carolina Experiment Station, at Raleigh, the other for Dr. W. T. Pate, Biologist, Gibson, N. C., forwarding same to each on the 5th inst.

I also visited and carefully inspected the pump-houses and water-sheds of the two stations, from which the water is obtained, in company with Mayor Crowell and the owner, Mr. Fetzer.

I found the ground about the walled spring, had been raised about the spring and graded off so as to make a water-shed of about fifty (50) feet all around it, and the surface was clear and free from grass and weeds, but not inclosed. Some additional machinery, of an improved pattern—mostly electrical—had been placed in the power-house, but no closet or stables had been removed from the water-shed. Mayor stated, however, that an ordinance removing them to go into effect June 1st, had been passed.

At the station on the opposite side of the ridge on which the town stands, known as the Reed Gold Mine Shaft Station, I found the pump and connecting pipes repaired and the pond freshly drawn off. Another dam had been constructed across the run of the spring about two hundred and fifty (250) feet above the shaft—covering an area of about 3,000 feet—the overflow of which was carried by a side-hill ditch to a wooden box receptacle about fifty (50) feet from the power-house, to be utilized for street sprinkling, the sprinklers taking it direct from the box.

The water-shed of this station is exactly as I found it in November last—barring the change of the pond. No closets or stables have been removed. All of the stables, and most of the closets discharge upon the surface, but others discharge in

unwalled and uncemented pits and "old wells," the latter of which are presumed to connect directly with the water-bearing strata within a radius of three hundred yards of the pumping stations.

Mayor Crowell is deeply interested in a plentiful supply of pure water and a limited sewerage within the financial capacity of the town. He afforded me every possible facility for inspection and stated that the town council had lately adopted an ordinance for the removal of the closets and stables from the water-shed, and assured me that if not rescinded at a subsequent meeting, he would see that the pits and vaults, after cleaning, should be well limed before filling, but the measure had met strong opposition, and there was danger of a reconsideration and rescinding of the ordinance before it goes into effect on June 1, 1898. I saw and conversed with some of the members of the town council, and gathered from their remarks that while all wanted pure water and plenty of it, they were disinclined to credit the contamination theory, and feared a "job," by which oppressive taxes would be inflicted without corresponding benefits. The *wells* on the dividing ridge are about forty feet in depth. How they will cleanse and purify those used for closet vaults, or whether they will fill them up without cleaning, or continue their use as heretofore—is yet an unsolved problem. I regret to have to state that the situation at Concord is not greatly improved from the situation of my November report, and I doubt whether it will be greatly improved until the water supply is taken from a source above and beyond the town limits. The mayor assured me that such a source existed about two miles out, with ample supply for many years of rapid annual increase.

CHEMICAL ANALYSIS.

Total solid matter
 in solution 9.58 gr. per U.S. gal.
 Hardness 3.6 deg. Clarke's sc.
 Equiv. to cal. car. 2.16 gr. per U.S. gal.
 Chlorine 0.79 gr. per U.S. gal.
 Free ammonia . . . 0.0073 parts per mil.
 Alum. ammonia, 0.0175 parts per mil.

A very pure water.

BACTERIOLOGICAL EXAMINATION BY DR. PATE.

Sample of water collected may 5th, 1898, by A. W. Shaffer, S. E., from tap at Johnson's drug store, Concord, N. C. This sample contains only 92 bacteria to the C. C. of water. No fermentation in lactose or glucose bouillon in 48 hours.

This indicates fair drinking water, and is by far the best sample that we have had from this supply.

—————
 SALISBURY, Nov. 24, 1897.

Took two samples water from flowing hydrant of E. K. James, on Inniss street. One to Dr. Albert Anderson, at Wilson, the other to Experiment Station, Raleigh.

Water derived from Cane creek, rising about six miles above town and flowing along the base of Dunn's mountain, from which a large part of its water comes. Water-shed, cleared land on one side and mountain growth on the other. No residential obstructions.

Power-house and intake two miles out; stand-pipe in town; no sewerage; pump run by Worthington engine; no filter; all in good condition. E. B. Neave, Superintendent.

Plant owned and operated by private parties, and water sold to small consumers at thirty cents per 1,000 meter gallons.

CHEMICAL ANALYSIS.

Total solid matter
 in solution 9.16 gr. per U.S. gal.
 Hardness 3.8 deg. Clarke's sc.
 Equiv. to cal. car. 2.33 gr. per U.S. gal.
 Chlorine 1.66 gr. per U.S. gal.
 Free ammonia . . . 0.0566 parts per mil.
 Alb. ammonia . . . 0.0725 parts per mil.

The chemical analysis does not give any indications of organic contamination.

BACTERIOLOGICAL EXAMINATION BY DR. ANDERSON

In the bacteriological analysis of sample of water sent from Salisbury, received on the 26th of November, there were revealed some bacteria of a suspicious nature. There were 180 bacteria to the cubic centimeter.

—————
 GREENSBORO, Nov. 25, 1897.

Took two samples water from running tap at Holton's drug store in Hotel McAdoo building on Main street. One sent to Dr. Albert Anderson, at Wilson, the other to the Experiment Station, Raleigh.

Thanksgiving Day; everybody gone a birding; did not go to plant or water-shed. Couldn't find anybody who knew anything about it.

Plant owned and operated by private parties, and water sold to the small consumers at forty cents per 1,000 meter gallons.

CHEMICAL ANALYSIS.

Total solid matter
 in solution 5.66 gr. per U.S. gal.
 Hardness 3.4 deg. Clarke's sc.
 Equiv. to cal. car. 2.0 gr. per U.S. gal.
 Chlorine 0.25 gr. per U.S. gal.
 Free ammonia . . . 0.0126 parts per mil.
 Alb. ammonia . . . 0.0737 parts per mil.

The chemical analysis does not give any indication of organic contamination.

BACTERIOLOGICAL EXAMINATION BY DR. ANDERSON.

On November 26th I received sample of water from the Greensboro public water supply. The bacteriological analysis showed 150 bacteria to the cubic centimeter. This water is good.

—————
 WINSTON, Nov. 26, 1897.

Took two samples from public hydrant in City Hall—one sent to Dr. W. T. Pate,

Gibson Station; the other to Experiment Station, Raleigh.

Supply derived from two springs. No water-shed; no filter and no sewerage.

Plant owned and operated by private parties and water sold to small consumers at 40 cents per 1,000 meter gallons. Rained all day. No ice accessible.

CHEMICAL ANALYSIS.

Total solid matter
in solution. . . . 4.08 gr. per U. S. gal.
Hardness 2.1 deg. Clarke's sc.
Equi. to cal. car. 0.91 gr. per U. S. gal.
Chlorine. 0.766 gr. per U. S. gal.
Free ammonia . . . 0.0233 parts per mil.
Album. ammonia, 0.0435 parts per mil.

The chemical analysis gives no indication of contamination.

BACTERIOLOGICAL EXAMINATION BY DR. PATE.

Shipped without ice. The quantitative examination gave 880 bacteria to the cubic centimeter.

The qualitative examination reveals no suspicious bacteria.

SALEM, Nov. 26, 1897.

Took two samples water from tap at Dr. Shaffner's drug store, on Main street—one for Dr. W. T. Pate at Gibson, the other to Experiment Station, Raleigh.

Water supply derived from springs in southwest part of town.

No water-shed, no filters and no sewerage.

Plant owned and operated by private parties, and water sold to the small consumers at 50 cents per 1,000 meter gallons. Rained all day.

No ice accessible for bacteriological specimen.

CHEMICAL ANALYSIS.

Total solid matter
in solution. . . . 5.08 gr. per U. S. gal.
Hardness 1.9 deg. Clarke's sc.
Equi. to cal. car. 0.78 gr. per U. S. gal.
Chlorine. 1.25 gr. per U. S. gal.
Free ammonia . . . 0.24 parts per mil.
Album. ammonia, 0.1935 parts per mil.

The chemical analysis indicates that this water is very dangerous. There seems to be contamination from sewage.

BACTERIOLOGICAL EXAMINATION BY DR. PATE.

The quantitative examination gave 1360 bacteria per cubic centimeter. This sample was sent by express without ice.

The qualitative examination gave no indication of the presence of suspicious organism.

As soon as the attention of the management of the Salem Water Company was called to the report of the State Chemist on their water, they expressed their inability to explain the apparent condition of the water, and at once asked that four new analyses, representing the four sources of supply, be made. This was done, but all four samples turned out chemically excellent water. The apparent contamination of the first sample has never been explained. The following are the supplementary analyses:

Total solid matter
in solution. . . . 2.92 gr. per U. S. gal.
Hardness 2.5 deg. Clarke's sc.
Equi. to cal. car. 1.25 gr. per U. S. gal.
Chlorine. 0.46 gr. per U. S. gal.
Free ammonia . . . 0.051 parts per mil.
Album. ammonia, 0.050 parts per mil.

This sample shows no indication of organic contamination.

Total solid matter
in solution. . . . 3.25 gr. per U. S. gal.
Hardness 3.3 deg. Clarke's sc.
Equi. to cal. car. 1.92 gr. per U. S. gal.
Chlorine. 0.67 gr. per U. S. gal.
Free ammonia. . . . 0.0316 parts per mil.
Album. ammonia, 0.0500 parts per mil.

This sample shows no indication of organic contamination.

Total solid matter
in solution. . . . 3.17 gr. per U. S. gal.
Hardness 2.3 deg. Clarke's sc.
Equi. to cal. car. 1.08 gr. per U. S. gal.
Chlorine 0.25 gr. per U. S. gal.
Free ammonia. . . . 0.0500 parts per mil.
Album. ammonia, 0.0487 parts per mil.

This sample shows no indication of organic contamination.

Total solid matter		
in solution.....	1.17	gr. per U.S. gal.
Hardness.....	1.8	deg. Clarke's sc.
Equi. to cal. car..	0.67	gr. per U.S. gal.
Chlorine.....	0.208	gr. per U.S. gal.
Free ammonia....	0.044	parts per mil.
Alb. ammonia, 0.0312		parts per mil.

This sample shows no evidence of organic contamination.

DURHAM, December 2, 1897.

Took two samples water from flowing public hydrant, corner Cochrane and Main streets. One to Dr. Albert Anderson, Wilson, the other to Experiment Station, Raleigh.

Water supply taken from a stream nine miles out, at its junction with Eno river. Reservoir five miles out. Filter and sewerage here. Did not visit water-shed, as it would consume another day.

Works owned and operated by private parties, who sell water to small consumers at twenty-five cents per 1,000 meter gallons, or \$3 per quarter with privilege of 12,000 gallons.

CHEMICAL ANALYSIS.

Total solid matter		
in solution.....	3.67	gr. per U.S. gal.
Hardness.....	1.9	deg. Clarke's sc.
Equiv. to cal. car..	0.75	gr. per U.S. gal.
Chlorine.....	0.275	gr. per U.S. gal.
Free ammonia....	0.173	parts per mil.
Alb. ammonia....	0.0505	parts per mil.

While the chemical analysis will not condemn this water, it places it under suspicion of being contaminated with organic matter.

BACTERIOLOGICAL EXAMINATION BY DR. ALEXANDER.

There were 316 bacteria to the cubic centimeter found in sample of water from Durham public water supply, received and put in culture December 3, 1897. The water is fairly good.

HENDERSON, December 3, 1897.

Took two samples water from running public hydrant on public square. One sent to Dr. W. T. Pate, Gibson Station, the other to Experiment Station, Raleigh.

Water taken from wells; no water-shed, no filter and no sewerage.

Plant owned and operated by private parties, and water sold to small consumers at forty cents per 1,000 gallons meter measure.

CHEMICAL ANALYSIS.

Total solid matter		
in solution.....	3.25	gr. per U.S. gal.
Hardness.....	1.5	deg. Clarke's sc.
Equiv. to cal. car..	0.42	gr. per U.S. gal.
Chlorine.....	0.25	gr. per U.S. gal.
Free ammonia....	0.067	parts per mil.
Alb. ammonia....	0.02037	parts per mil.

BACTERIOLOGICAL EXAMINATION BY DR. PATE.

The quantitative examination gave 184 bacteria per cubic centimeter. The qualitative tests indicate safe drinking water.

RALEIGH, December 7, 1897.

Two samples water taken from running public hydrant in front of Metropolitan Hall on Fayetteville street. One to Dr. Albert Anderson, at Wilson, the other delivered in person to Experiment Station, Raleigh.

Water supply taken from Walnut creek, one mile south of city. Intake a mile above, and a fourth of a mile above Rhamkatte road. Stream rises at Cary, eight miles west of city. Water-shed visited, inspected and fully reported on heretofore. Condemned Yates dam still dominates the waters. The company filter their water, and the city is sewered.

Plant owned and operated by private parties, who sell water to the small consumers at forty cents per 1,000 meter gal-

lons, conditioned that it amount to \$12 per annum, or 30,000 gallons per annum.

DETAILED REPORT ON WATER-SHED.

"I have the honor to report upon the water-shed of the Raleigh water company, visited and inspected in company with Dr. James McKee, Superintendent of Health of the city; W. M. Russ, Mayor, and Alex. M. McPheeters on the part of the company, on the 24th inst. Commencing at Cary, we found two open, unboxed privies on the bank of the main ditch, and a pig-pen on another, the contents of the latter flowing directly into the main ditch at a distance of about 200 feet.

"The main ditch contained a very slight run of water, the product of a heavy shower the previous night. There is no living tributary at Cary, the ditch carrying no water except surface water during, and a few hours after, a storm—twenty-four hours after which it is as "dry" as the town ordinance. The first evidence of a living stream appears about a mile below the town.

"We found all the streams running muddy water from the rains of the previous night, until we reached the Hugh Campbell spring branch, a bold, crystal stream flowing from two fine springs on the place.

"The water-shed from Cary to Raleigh is largely covered and protected by a natural growth of forest and hedge, briars, cane and shrub, and we found little to criticise until we reached the "Little Yates Mill," of L. D. Castlebury, on the Avent Ferry road in Swift Creek township. The dam of this mill backs water over five to six acres, filled with mud and decomposed vegetation, with a rank growth of grass, reeds, shrubs and weeds. As the water is very shallow and the mud very deep the site can be of no considerable value for mill purposes, and afforded no evidence of late use. Such a deposit in

the main run of the water supply must of necessity contaminate the water that flows from that point, creating a nuisance that ought to be abated if possible.

"I am informed by Dr. McKee that this dam was reported detrimental to the health of the people of Raleigh and declared to be a nuisance in December, 1895. I have since found such report and declaration, bearing date December 21, 1895, and signed by him officially as Superintendent of Health of the city of Raleigh, and the signature of Dr. P. E. Hines, preceded by the following: '*I endorse the above recommendation.*'

"The intake of the company is situated upon the Grimes farm above the bridge on the Rhamkatte road about a mile southwest of the corporate limits of the city. The surplus water flows over a natural ledge of gneissoid granite brought to a dead level so as to carry off all floating foreign matter at every point, *always provided* it first escape the wide mouth of the intake, set in the current and facing up stream, like a saurian bobbing for flies. A proper adjustment of this intake would greatly relieve the filter at the pump-house, and remove an ever-present source of adverse criticism."

CHEMICAL ANALYSIS.

Total solid matter	
in solution.....	4.58 gr. per U.S. gal.
Hardness	2.1 deg. Clarke's sc.
Equiv. to cal. car.	0.92 gr. per U.S. gal.
Chlorine.....	0.30 gr. per U.S. gal.
Free ammonia ...	0.031 parts per mil.
Alb. ammonia....	0.0787 parts per mil.

The chemical analysis shows no indication of contamination from organic matter.

BACTERIOLOGICAL EXAMINATION BY DR. ANDERSON.

I found 240 bacteria to the cubic centimeter in sample from the Raleigh public

water supply, some of which were of a suspicious nature.

The order of the State Board of Health is executed. All which is respectfully submitted. A. W. SHAFFER, S. E.

REVIEW OF DISEASES FOR MAY, 1898.

(SEVENTY-SIX COUNTIES REPORTING.)

Eighty-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of May the following diseases have been reported from the counties named:

MEASLES.—Alexander, 7; Ashe, 4; Beaufort, 75; Buncombe, 1; Catawba, numerous; Chowan, many; Davidson, 5; Forsyth, in all parts; Harnett, epidemic in one section; Johnston; Moore, 75; Orange, 1; Pitt; Rockingham, a few; Vance, 4; Wake, 4; Warren, several; Washington, 3; Wayne, 6; Wilkes, 100—20 counties.

WHOOPING-COUGH.—Ashe, 3; Chowan, many; Durham, some; Granville; Harnett, a few; Nash, a few; Onslow, 10; Orange, a few; Robeson; Warren, several; Washington, 40; Wilkes, 25; Yadkin, 12—13 counties.

SCARLATINA.—Cumberland, 3; Harnett, 2; New Hanover, 7; Richmond, 3;

DIPHTHERIA.—McDowell, 1; Macon, 1;

TYPHOID FEVER.—Alexander, 2; Beaufort, 1; Buncombe, 2; Chowan, several; Cleveland, 2; Columbus, 1; Davidson, 1; Gaston, several; Greene, 2; Iredell, 1; Jackson, 4; McDowell, 2; Macon, 4;

Mecklenburg, 8; Mitchell, 4; Nash, 1; New Hanover, 4; Onslow, 2; Perquimans, a few; Person, 2; Pitt, a few; Rockingham, 1; Sampson, a few; Union, 10; Wake, 1; Watauga; Wilkes, 1; Yadkin, 1—28 counties.

MALARIAL FEVER.—Catawba; Cleveland, 4; Columbus, 4; Halifax; Harnett; Jones; Mecklenburg; New Hanover, in all parts; Onslow; Person; Polk, a little; Robeson; Sampson; Vance; Warren and Wilson, in all parts—16 counties.

MALARIAL FEVER, PERNICIOUS.—Jones, 1.

MALARIAL FEVER, HEMORRHAGIC.—Cumberland, 1; Jones, 1.

MUMPS.—Clay; Sampson; Wayne.

DIARRHŒAL DISEASES, including Dysentery. Alamance, in some neighborhoods, local; Bertie, local; Bladen, local; Burke, throughout the county, general; Caldwell, a few cases; Chatham, local; Cherokee, general; Chowan, general; Cleveland, general; Columbus, local; Cumberland, general; Davidson; Franklin, general; Gaston, a few cases; Gates, local; Greene, general; Guilford, general; Halifax, general; Harnett; Henderson, general; Hertford, local; Iredell, general; Jones; Lincoln, general; McDowell; Macon, general; Madison, local; Martin, general; Mecklenburg; Nash, general; Northampton, local; Pasquotank, in children, local; Person, local; Robeson, local; Rockingham, general; Sampson, general; Stokes, general; Surry, general; Transylvania, local; Union, in some portions, general; Warren, general; Yadkin, local—42 counties.

INFLUENZA.—Jackson; Northampton; Vance.

PNEUMONIA.—Gaston; Jackson.

SMALLPOX.—Iredell, 8; Wilson, 1.

CHOLERA IN HOGS.—Bertie; Onslow; Wilkes.

CHOLERA, IN CHICKENS.—Harnett.

DISTEMPER, IN HORSES.—Clay.

ROUP, IN CHICKENS.—Clay.

No diseases of importance are reported from Cabarrus, Carteret, Edgecombe, Haywood, Pender, Polk, Swain and Yancy.

No reports have been received from the following counties having Superintendents of Health: Anson, Brunswick, Craven, Duplin and Rowan.

**Summary of Mortuary Reports for May
1898 (Twenty-two Towns).**

Only those towns from which certified reports are received are included:

White. Col'd. Total.

Aggregate population	67,789	53,621	121,410
Aggregate deaths	75	94	169
Representing temporary annual death rate per 1,000	13.3	21.0	16.7

Causes of Death.

Typhoid fever	0	2	2
Malarial Fever	0	5	5
Whooping-cough	0	1	1
Measles	0	2	2
Pneumonia	1	4	5
Consumption	7	6	13
Brain diseases	6	5	11
Heart diseases	4	9	13
Neurotic diseases	1	1	2
Diarrhoeal diseases	14	10	24
All other diseases	40	49	88
Accident	1	1	2
Suicide	1	0	1
	<hr/> 75	<hr/> 94	<hr/> 169
Deaths under five years	24	37	61
Still-born	6	15	21

Mortuary Report for May, 1898.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-Cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS.		Still-born.
		By Races.	Total.	By Races.	Total.																	By Races.	By Towns.	
ASHEVILLE.....	W.	8,000		12.0	21.2								1	1	1	1	5					5	23	1
Dr. M. H. Fletcher.	C.	5,000	13,000	36.0		1						2	1	1	1	1	3	1				15	28	1
DURHAM.....	W.	4,000		15.5	12.0								1	1			3	1				6	3	1
Dr. J. M. Manning.	C.	2,000	6,000	0.0																		1	4	1
FAYETTEVILLE.....	W.	3,500		10.3	8.0										1	1	1					3	1	1
Dr. J. V. McGougan.	C.	2,500	6,000	4.8																		1	4	1
GOLDSBORO.....	W.	4,000		15.0	15.4								1	1			2	1				5	4	1
D. J. Broadhurst, C. Ck.	C.	3,000	7,000	16.0				1		1	2											9	2	1
GREENSBORO.....	W.	6,000		10.0	21.6								1	1			1	2				5	5	
J. S. Michaux, City Clk.	C.	4,000	10,000	39.0				2				1	1	1		1	4	3				13	18	11
HENDERSON.....	W.	2,250		0.0	2.8																	0	1	1
Dr. F. R. Harris.	C.	2,000	4,250	6.0									1									1	1	1
HILLSBORO.....	W.	700		17.1	12.0													1				1	1	
Dr. C. D. Jones.	C.	300	1,000	0.0																		0	1	
LENOIR.....	W.</																							

N. B.—The reporters for the cities and towns printed in **BLACK TYPE** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

*In addition, there were 9 deaths, white, non-residents, from consumption.

County Superintendents of Health.

Alamance	Dr. J. K. Stockard.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Anson	Dr. E. S. Ashe.	Lincoln	Dr. W. L. Crouse.
Ashe	Dr. L. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. D. T. Tayloe.	Macon	Dr. S. H. Lyle.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	Dr. A. F. Thompson.
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. H. B. Shields.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. D. M. Moser.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan	Dr. R. H. Winborne.	Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moye.
Craven	Dr. L. Duffy.	Polk	Dr. C. J. Kenworthy.
Cumberland	Dr. J. Vance McGougan.	Randolph	Dr. T. T. Ferree.
Currituck	No Board of Health.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames.	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. W. L. Crump.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCanless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. W. J. Judd.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. P. J. Macon.
Harnett	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Councill.
Henderson	Dr. J. G. Waldrop.	Wayne	Dr. P. C. Hutton.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. M. Turner.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. William Self.	Yancey	Dr. J. L. Ray.

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your County on or before the third of each month, that he may use it in making his report to the Secretary of the State Board]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough _____ Typhoid Fever _____

Measles _____ Typhus Fever _____

Diphtheria _____ Yellow Fever _____

Scarlet Fever _____ Cholera _____

Pernicious Malarial Fever _____ Small-pox _____

Hemorrhagic Malarial Fever _____ Cerebro-spinal Meningitis _____

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks : _____

_____ M. D.

_____ 189 _____

_____ N. C.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, at Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.
S. WESTRAY BATTLE, M. D., Asheville
W. H. HARRELL, M. D., Williamston.
JOHN WHITEHEAD, M. D., Salisbury.

C. J. O'HAGAN, M. D., Greenville.
J. D. SPICER, M. D., Goldsboro.
J. L. NICHOLSON, M. D., Richlands.
A. W. SHAFFER, SAN. ENG., Raleigh.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

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No. 4.

SMALLPOX IN NORTH CAROLINA.

During the past month there has been a material spread of the disease both as to the number of cases and localities infected. When we last went to press, it was reported as present at only two points—Statesville and Vanderborg's Chapel, both in Iredell county. At this present writing (July 19), smallpox exists in addition at Mooresville, 1 case; Elmwood, 2—both in Iredell; Asheville, 1, which is nearly well; Catawba, 6, in one family in southeastern part of county; Cleveland, in Rowan county, 7; Reidsville, 1; Durham, 1.

When the Superintendent of Health of Rowan county was first notified of the existence of smallpox at Cleveland he found 20 cases, 13 of whom had recovered. They had been diagnosticated as chickenpox, urticaria, and pemphigus and no precautions whatever were taken in consequence. The people, we are told, called it "elephant itch"—not a bad name, as the eruption of smallpox is about the biggest thing of its class, in what it means, at any rate.

A negro from Cleveland went to Reidsville and was there two days with the

eruption of smallpox on him before he was discovered. During that time he went on an excursion and mingled promiscuously with his people. One of these who had been exposed went from Reidsville to Durham in the beginning of the eruption stage. Although sought for, he was not found until next morning, after he had slept in the same room with several others.

Reports from Asheville, Iredell county, generally, Cleveland and Durham, show everything in good shape except the reluctance in too many instances of the people to be vaccinated. The reports, however, from Catawba county and Reidsville are not at all satisfactory, and we fear a spread of the disease in those localities.

IN REGARD TO SMALLPOX.

While the instructions for quarantine and disinfection issued by the Board several years ago in compliance with the requirements of Section 9 of the Act in Relation to the Board of Health, really embody all that is necessary, if faithfully carried out, for the restriction of contagious diseases, it is thought advisable in view of the prevalence of smallpox in one

section of the State, and the strong probability of its spreading, to issue fuller and more specific directions as to the management of that particular disease.

In order to be perfectly plain it may be necessary to be somewhat elementary and the well informed health officer must not consider what is said as a reflection upon his intelligence and knowledge. It should be remembered that this is merely a supplement to the "Instructions" and the two must be read together.

We will consider the subject in its relation, 1, to the patient; 2, to the physician; 3, to the general public; 4, to the municipality, and finally, 5, to vaccination.

1. *The Patient.*—Owing to the tendency in human nature to put away disagreeable things it seems that in many cases the attending physician is loath to admit that the case is one of smallpox and calls it chickenpox, urticaria and even pemphigus, while the people, in one locality at least, denominate it "elephant itch." When a mistake is made in the diagnosis, or until it is correctly made, no precautions are taken, as a rule, and free intercourse with the patient being allowed, the infection is spread. The diagnosis is not difficult, but as no chances should be taken, the obviously proper thing to do whenever there is any doubt about it is to manage the case as if it were smallpox. When smallpox is prevailing every one with an eruption who a few days before its appearance had headache, pain in the back and fever, should be strictly quarantined until time has settled the question. Above all things the patient should be properly cared for. This is not a superfluous suggestion—as it ought to be—for it occasionally happens that the cry of smallpox produces such an acute and general panic that the poor sufferer is more or less neglected, for a while at least. There is no excuse for this, as thoroughly vaccinated persons can handle such cases with as little danger as they could measles.

2. *The Physician.*—The greatest care should be taken by the physician to avoid carrying the infection to others. He should have a special suit of clothes during the warm weather of some material that will wash—or better, perhaps, a long gown of linen or cotton, buttoning close around the neck above the collar and tightly around the wrists, to be worn over his ordinary clothes, with a cap of paper or oiled silk completely covering his hair, while his feet are protected by rubber shoes. The garments should be donned in an uninfected room, or out of doors if there is no room, and removed upon returning to the same from the room of the patient. If the disease is present in only one house, the special suit can be left there but not in the room with the patient. If, however, there be cases in other houses to be seen, it can be rolled up and carried in a close-shutting hand-bag. To make assurance doubly sure it would be well after the rounds for the day have been made to hang it up in a box or closet or wardrobe in an unoccupied room and disinfect it with one of Schering & Glatz's small formaldehyde lamps. Before going to bed hang it out of the window to remove the formaldehyde odor. Do not forget to disinfect the hand-bag also, if one is used. Before leaving the premises the hands and face, (beard particularly) should be washed with some reliable antiseptic—bichloride of mercury, 1 to 2000, or a 2 per cent. solution of carbolic acid, for example.

3. *The General Public.*—The people should bear in mind the fact that there is no reason whatever for becoming panic-stricken at the announcement of smallpox in their community—by no means such good reason as on the appearance of diphtheria or scarlet fever. In smallpox alone of all the contagious diseases have we a sure preventive—vaccination. All one has to do in such circumstances is simply to get his physician to successfully vaccinate him and go on his way rejoicing without the

least fear or anxiety. Should the disease become epidemic and the first vaccination fail to take, it would be well for the sake of certainty to be re-vaccinated at the end of a week. It is to be borne in mind that this advice regarding the necessity for vaccination applies with almost equal force to those persons who have been vaccinated in childhood and have reached adult life. For while it is true that the primary vaccination done in early life may in most instances protect the persons through life, this immunity for so long a period cannot be assured, and to make themselves safe, it is most advisable to have the vaccination done again. This will appear reasonable, when it is remembered that if the person vaccinated in early life does contract smallpox, it will only develop into a very mild form, varioloid; but it must not be forgotten that this mild form, this varioloid is of the same nature as the severer forms and will excite in the unvaccinated typical and often fatal smallpox. Good citizens should and would hold up the hands of the powers that be and cheerfully render every possible assistance in carrying out thoroughly and loyally the plans devised for stamping out the disease. No dependence, to the exclusion of vaccination, should be placed upon quarantines, for inland quarantines are notoriously ineffective.

4. *The Municipality.*—The authorities of any city or town liable to become infected from other points should not wait until the disease actually appears in their own community but make their preparations for taking care of and checking its spread in advance. The proper management of smallpox demands a hospital consisting of at least four rooms—preferably two small houses of two rooms each—for the separate accommodation of both sexes of the two races; and a larger house for the detention of those known to have been exposed, until the period of incubation—say fifteen days—has passed. As we never

think lightning is going to strike us such complete anticipatory preparation can hardly be expected, but preliminary arrangements ought to be made for providing, with the least possible delay, these necessary buildings. Tents would answer in warm weather. When a case appears in the town itself an abundant supply of first-class virus should be ordered by wire, arrangements should be made with a sufficient number of physicians to perform the work quickly, and everybody not giving satisfactory evidence of previous vaccination should be vaccinated. If not already in existence, such ordinances as may be necessary, with sufficient penalties attached, should be immediately enacted. Section 25, chapter 214, Laws of 1893, gives all incorporated towns the fullest power in this matter, whether given in their charters or not.

5. *Vaccination.*—There is, we regret to say, considerable opposition to vaccination among the people. This is due chiefly to the prejudice of ignorance, and is, therefore, more difficult to overcome. There is not sufficient ground for this prejudice. While it is true that "bad arms" occasionally follow vaccination it is but rarely, if the proper precautions are taken in making the vaccination and decent care is taken of the arm afterwards. If good bovine virus is used there is no danger of the transmission of any disease. The heifers in the best establishments are always tested for tuberculosis—even if tuberculosis can be transmitted in that way, which is extremely doubtful, to say the least. Admitting that there is some ground, though by no means sufficient, for the breadwinner of a family to object for himself, there is none for his children. In this connection we believe it would be not only humane but wise, from a purely business point of view, for all large employers of labor, as mill-owners with us, to insist on the vaccination of all operatives, agreeing, in case of disability there-

from, to pay half wages or at least enough to prevent suffering.

Vaccination is one of the simplest of operations, but many bad arms are undoubtedly traceable to its improper performance—to the neglect of a little care. Thorough asepsis should be observed. The arm should be scrubbed clean with soap and water, and the vaccination performed with a sterilized instrument, the point itself, which has already been sterilized, if points are used, or if a steel instrument be employed, by wiping clean and passing it through the flame of an alcohol lamp after each vaccination. To avoid the necessity of carrying the alcohol lamp around in house to house visitation, it has been suggested that the vaccinator carry a paper of fair-sized needles with him, and with these needles scarify the place where he intends to introduce the virus, using a fresh needle for each patient. Do not make the scarifications over a quarter of an inch square, and avoid, if possible, drawing blood, as the clot in drying takes up and holds some of the virus. It is recommended three or four of these little scarifications be made quite close together in a group. The best opinion at present is that pus infection is less liable to follow the use of the glycerinated lymph, though the points have many friends on account of their convenience and the rapidity with which they can be used. *Vaccinate. Vaccinate! VACCINATE!! VACCINATE!!!*

REVIEW OF DISEASES FOR JUNE. 1898.

(SEVENTY-SIX COUNTIES REPORTING.)

Eighty-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physi-

cians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of June the following diseases have been reported from the counties named:

MEASLES.—Davidson, 6; Forsyth, in all parts; Martin, 4; Mecklenburg, a few; Pitt; Rockingham; Vance, 3; Warren; Wayne, 2—8 counties.

WHOOPING-COUGH.—Ashe, 10; Durham; Granville; Harnett, a few; Northampton; Onslow, 10; Pasquotank, 2; Rockingham; Vance, 12; Warren; Washington, 25; Yadkin, many—12 counties.

SCARLATINA.—Catawba, 2; Rockingham, 1.

TYPHOID FEVER.—Alexander, 11; Beaufort, 3; Burke, 4; Cabarrus, 10; Caldwell, in several sections; Catawba, 8; Cherokee, 4; Clay, 2; Cleveland, 12; Columbus, 3; Davidson, 4; Durham, 2; Edgecombe, several; Gaston, in nearly all parts; Greene, 3; Guilford, several; Harnett, a few; Henderson, 1; Hertford, 3; Iredell, in all parts; Jackson, 16; Jones, 2; Lincoln, 4; Macon, 18; Madison; Martin, 5; Mecklenburg; Mitchell, 20, malignant in type, chiefly in the western part; Nash, a few; New Hanover, 8; Northampton; Orange, 2; Pasquotank, 8; Pender, 1; Perquimans, in all parts, 12 cases; Pitt, general; Polk, 1; Randolph, 5; Robeson; Rockingham, 3; Rowan; Rutherford, a few; Sampson, in many parts; Stokes, 3; Surry, 5; Union, 25; Vance, in many parts; Wake; Washington, 1; Watauga, in all parts, 15; Wayne, 3; Wilkes; Yancey, a few—53 counties.

MALARIAL FEVER.—Cabarrus, Catawba, in all parts; Chatham; Columbus; Davidson, in all parts; Durham, in nearly all parts; Greene; Halifax; Harnett, along the Cape Fear; Iredell; Johnston; Jones; Lincoln, a few cases; New Hanover,

Northampton, in all parts; Onslow; Orange, a few; Person; Robeson; Rowan; Union; Warren, in all parts to a limited extent; Wayne; Wilson, in all parts—24 counties.

MALARIAL FEVER, PERNICIOUS — Har-
nett, 1.

MALARIAL FEVER, HEMORRHAGIC.—
Cabarrus, 2.

DIARRHOEAL DISEASES (including dys-
entery).—Bertie; Cabarrus, throughout
the county, general; Chowan, general;
Cleveland; Gates; Greene; Haywood, gen-
eral; Henderson; Jackson; Lincoln; Mc-
Dowell; Macon, general; Onslow, general;
Pasquotank; Perquimans, general; Person;
Robeson; Rockingham, general; Ruther-
ford; Sampson, in many parts; Stokes,
general; Surry, general; Transylvania;
Union, general; Warren, in all parts to a
limited extent; Washington, general; Yad-
kin; Yancey, in many parts—27 counties.

PNEUMONIA. — Cleveland; Jackson;
Onslow, 2.

SMALLPOX.—Buncombe, 1; Catawba, 6
in southeastern part; Iredell, 18—in hos-
pital at Statesville 14, at Mooresville 1,
at Vanderborg's Chapel 1, at Elmwood,
2; Rockingham, 1 in Reidsville; Rowan,
20 at Cleveland.

GLANDERS.—Mecklenburg, 3 cases in
children reported from lower part of
county, contracted from a horse. They
were not very severe, and are now well.
The horse was burned and the children
isolated. No new cases have occurred
among animals or human beings. Acute

coryza, enlarged glands of neck and fever
were the symptoms noted.

CHOLERA IN CHICKENS.—Clay.

CHOLERA IN HOGS.—Gates, Jackson,
Onslow.

DISTEMPER IN HORSES.—Jackson.

HYDROPHOBIA —Catawba.

Summary of Mortuary Reports for June. 1898 (Twenty-four Towns).

Only those towns from which certified
reports are received are included:

	<i>White. Col'd. Total.</i>		
Aggregate popula- tion	87,598	66,010	153,608
Aggregate deaths	109	130	239
Representing tem- porary annual death rate per 1,000	15.0	23.6	18.7
<i>Causes of Death.</i>			
Typhoid fever	7	9	16
Malarial Fever	2	4	6
Whooping-cough	1	1	2
Pneumonia	3	2	5
Consumption	6	10	16
Brain diseases	6	4	10
Heart diseases	8	6	14
Neurotic diseases	0	3	3
Diarrhceal diseases	27	34	61
All other diseases	46	51	97
Accident	3	6	9
	109	130	239
Deaths under five years	43	54	97
Still-born	1	7	8

Mortuary Report for June, 1898.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-Cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	By Races.	By Towns.	TOTAL DEATHS By Towns.	Deaths Under 5 Years.	Still-born.
		By Races.	Total.	By Races.	Total.																					
ASHEVILLE	W.	8,000		15.0																		10				
Dr. M. H. Fletcher.	C.	5,000	13,000	28.8	20.3	1	1					1	1	2	1	3	3					12	12	24	3	1
CHARLOTTE	W.	17,153		11.2																		16	15	31	6	
Dr. F. O. Hawley.	C.	9,000	26,153	24.0	15.6								1	2	1	4	12					3	34	37	5	4
DURHAM	W.	4,000		21.0									3									7	7	7	3	
Dr. J. M. Manning.	C.	2,000	6,000	0.0	14.0																	0	0	0		
GOLDSBORO	W.	3,500		10.3																		3	3	3		
D. J. Broadhurst, C. Ck.	C.	2,500	7,000	9.6	8.6																	2	2	5		
GREENSBORO	W.	5,500		10.9											1							5	5	14	2	
J. S. Michaux, City Ck.	C.	2,500	8,000	43.2	21.0	1	2						2				1	3				12	12	2	1	
HENDERSON	W.	2,250		10.7																		12	12	6	2	
Dr. Goode Cleatham.	C.	2,000	4,250	24.0	16.9	1	2					1										4	4	6		
HILLSBORO	W.	400		0.0																		0	0	0		
Dr. C. D. Jones.	C.	300	700	0.0	0.0																	0	0	0		
LENOIR	W.	500		13.3																		1	1	1		
Dr. A. A. Kent.	C.	300	1,200	0.0	10.0	1																0	0	1		
MARION	W.	750		16.0																		0	1	1		
Dr. B. A. Cheek.	C.	250	1,000	0.0	12.0														1			0	1	0		
MONROE	W.	1,800		13.3																		2	2	3		
Dr. J. M. Blair.	C.	600	2,400	20.0	15.0												2	1				1	3			
NEWBERN	W.	3,500		20.6									1				1	3				6	6	22	3	
Hugh J. Lovick, C. Ck.	C.	6,000	9,500	32.0	27.8	2	2						1		1		8	2				16	22	14		
OXFORD	W.	1,200		50.0																		5	5	8	1	
Dr. G. A. Coggeshall.	C.	1,100	2,300	32.7	41.7				1		1						1	4				3	3	3		
RALEIGH	W.	8,500		22.6								1	1	2	3		1	8				6	6	30	5	
E. P. Sale, Clerk B. H. C.	C.	7,500	16,000	22.4	22.5								2	3		1	4	7				14	20	12		
ROCKINGHAM	W.	1,300		0.0																		6	0			
Dr. W. M. Fowlkes.	C.	450	1,750	0.0	0.0																	0	0			
ROCKY MOUNT	W.	1,600		7.5													1					1	1			
Dr. G. L. Wimberley.	C.	1,000	2,600	36.0	18.5	2							1									3	4			
SALEM	W.	4,100		8.8								1							2			3	3	1		
S. C. Butler, Mayor.	C.	450	4,550	0.0	7.9																	0	0			
SALISBURY	W.	4,000		18.0									1	1								6	6	11	3	
Dr. W. L. rump.	C.	2,000	6,000	30.0	22.0	1											1					5	11	2		
SCOTLAND NECK	W.	775		15.5															1			1	1	1	1	
J. A. Perry, Mayor.	C.	425	1,200	0.0	10.0																	0	0			
TARBORO	W.	1,200		20.0				1					1									2	2	4		
Dr. L. L. Staton.	C.	1,300	2,500	18.5	19.2								1						1			2	4			
WARRENTON	W.	970		37.1													3					3	3	5	3	
Dr. P. J. Macon.	C.	785	1,755	30.6	33.8										1		1					2	2	1		
WASHINGTON	W.	3,000		28.0								1					6					7	7	6		
Dr. D. T. Tayloe.	C.	2,500	5,500	43.2	31.9	1							1	1	1	5						9	16	6		
WELDON	W.	700		0.0																		0	0			
J. T. Gooch, Mayor.	C.	750	1,450	16.0	8.3												6	1				0	1			
WILMINGTON	W.	104,000		14.4															7	2		12	37	2		
Dr. W. D. McMillan.	C.	15,000	25,000	20.0	17.8	2	1						2		1		1	19	2			25	37	6	1	
WILSON	W.	2,500		1.2															2	1		4	4			
Dr. A. Anderson.	C.	2,300	4,800	0.0	10.0																	0	0			

N. B.—The reporters for the cities and towns printed in **BLACK TYPE** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

*In addition, there were 3 deaths, white, non-residents, 2 from consumption, and 1 from pneumonia.

County Superintendents of Health.

Alamance	Dr. J. K. Stockard.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Anson	Dr. E. S. Ashe.	Lincoln	Dr. W. L. Crouse.
Ashe	Dr. L. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. D. T. Tayloe.	Macon	Dr. S. H. Iyle.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	Dr. A. F. Thompson.
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. Gilbert McLeod.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. D. M. Moser.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan	Dr. R. H. Winborne.	Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moyer.
Craven	Dr. L. Duffy.	Polk	Dr. C. J. Kenworthy.
Cumberland	Dr. J. Vance McGougan.	Randolph	Dr. T. T. Ferree.
Currituck	No Board of Health.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames.	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. W. L. Crump.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCannless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. W. J. Judd.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. P. J. Macon.
Harnett	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Council.
Henderson	Dr. J. G. Waldrop.	Wayne	Dr. Jas. H. Powell.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. M. Turner.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. J. H. Wolff.	Yancey	Dr. J. L. Ray.

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your County on or before the third of each month, that he may use it in making his report to the Secretary of the State Board]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough _____ Typhoid Fever _____

Measles _____ Typhus Fever _____

Diphtheria _____ Yellow Fever _____

Scarlet Fever _____ Cholera _____

Pernicious Malarial Fever _____ Small-pox _____

Hemorrhagic Malarial Fever _____ Cerebro-spinal Meningitis _____

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks : _____

_____ M. D.

_____ 187_____ N. C.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, at Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.
S. WESTRAY BATTLE, M. D., Asheville
W. H. HARRELL, M. D., Williamston.
JOHN WHITEHEAD, M. D., Salisbury.

C. J. O'HAGAN, M. D., Greenville.
J. D. SPICER, M. D., Goldsboro.
J. L. NICHOLSON, M. D., Richlands.
A. W. SHAFFER, SAN ENG., Raleigh.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIII.

AUGUST, 1898.

NO. 5.

NATIONAL CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH.

This, in our opinion, practically the most valuable of the sanitary organizations of the country, met in annual session at Detroit on the 9-11 August. The time of the meeting was set to accord with that of the Michigan State Board of Health so as to assist in the celebration of the Quarter Centennial of the latter.

The first day of the three was given especially to the Michigan exercises. A number of valuable papers were read and words of congratulation for the admirable work done in the past twenty five years by this progressive board, one of the best in the country, were spoken, and the occasion was a success, although the attendance of local health officers was disappointing.

The last two days were devoted to the work of the Conference, saving a large slice of the second day consumed by the graceful hospitalities of Messrs. Parke, Davis & Co., and of the local committee. We were greatly impressed by the magnitude, completeness and finish of the work done by this great drug house.

Particularly were we pleased with all the arrangements for the preparation of the diphtheria and other anti-toxins. No pains or expense seemed to be spared to produce the very best quality of every thing. The morning session of this day was given up to the papers by representatives of the various boards of health setting forth the best methods of sanitary work according to their experience, with suggestions as to possible improvements. The evening session was devoted to the discussion of the purification of drinking-water. The last day was consumed chiefly by a thorough consideration of tuberculosis, etiologically, pathologically, therapeutically and sanitarily. The paper of the day was by Dr. D. E. Salmon, of the United States Bureau of Animal Industry on the variations of the tubercle bacillus in birds, animals and fishes. The general opinion seemed to be in favor of the establishment of sanatoria for tuberculous cases, supported in part at least, by the State. We fear that such an idea is visionary, and that the same amount of money might be made much more effective in other ways in preventing the spread of tuberculosis.

Detroit is a very attractive city and is a favorite meeting place for all sorts of organizations. We can now understand why it should be.

PURE MILK.

We are pleased to learn from the newspapers that the Charlotte Medical Society, in consequence of a paper read before it by Dr. I. W. Faison on "Some of the Dangers of Milk," has appointed "a committee to investigate the entire milk question and report at the next meeting." Good for the Charlotte Medical Society! We hope their action may result in something of practical value. Nearly two years ago at a health conference in the same city we read a paper on the "Infectiousness of Milk," in which we expressed the hope that that progressive town would take the initiative in establishing municipal regulation of the milk supply, but nothing came of it. We hope to return to this subject when we have more space.

DISINFECTANTS AND DISINFECTION.

Some body has said that the best executive officer is the one who can get the most work out of other people. Acting on that principle we propose, after making our acknowledgements, to reprint from *The Sanitary Inspector*, the official bulletin of the Maine Board of Health, the very complete circular on the above subject, the result of "the laborious work of months" by the excellent secretary, Dr. Young. We have already printed and circulated in "Instructions for Quarantine and Disinfectants" information as to all the older disinfections, and in recent numbers of the BULLETIN have rung the changes on formaldehyde, but this paper is specially valuable for the purpose of disillusioning people as to some worthless agents supposed to be good.

[CIRCULAR No. 68.]

STATE BOARD OF HEALTH OF MAINE.

DISINFECTANTS AND DISINFECTION.

Any circular on disinfection should necessarily be considered as only provisional. Modern scientific methods are constantly adding to our accumulation of those facts which help us to destroy disease germs with greater certainty. Our knowledge of the relative activities of the various disinfecting agents and of their applicability to special purposes has in recent years been so widely extended that there has been a great gain in the certainty of results in disinfecting work—at least so far as the recent additions to our exact knowledge of disinfecting agents are put to practical use.

One great obstacle to improvement in methods is the influence of old traditions. Many agents formerly in repute are now known to have but little value as real disinfectants. (See "Disinfectants, Real and False.")

A disinfectant is an agent which may be used for the destruction of disease germs. A disinfectant is then a germicide. A deodorant is something capable of removing disagreeable smells. Some deodorants are also trustworthy disinfectants, and some are not; while, on the other hand, some disinfectants are very efficient deodorants, and others have less value in this direction.

In disinfecting work, therefore, the distinction between disinfection and deodorization should be kept strictly in view, and agents and processes should be employed which, by the more exact methods of modern times, have been proved to be efficient destroyers of infection.

The observance of this reasonable rule will exclude the use of some "time honored" disinfectants and many patent or proprietary preparations. As regards the latter generally, they may well be replaced by solutions which may be prepared under the direction of any druggist, physician, or experienced health officer, and which are more economical and of known efficiency. The sale of some of the old nostrums is still bolstered up by testimonials or favorable words uttered before exact methods of testing them were known.

DISINFECTANTS, REAL AND FALSE.

Carbolic Acid.—Although not one of the most rapidly acting disinfectants, this has been one of the most useful. Some other agents are preferable when the time for disinfection is necessarily brief. When it can have ample time to act, its action, as well as that of the cresol preparations, is continuous; for, in exerting its disfectant power, it is not itself decomposed by organic matter, as is the case with the oxidizing agents—chloride of lime, permanganate of potassium, etc. Its action is unimpaired by the presence of acids, alkalies, salts, or albuminous material. The activity of its solutions is increased by the addition of common salt. Solutions are also more effective when warm or hot. Dissolved in alcohol, oil, or glycerine, carbolic acid loses nearly all its disinfectant qualities. The dangerously poisonous nature of carbolic acid indicates the necessity of precaution against accidents by swallowing, or by too extensive applications to the human body.

Crude Carbolic Acid.—Crude carbolic acid is only slightly soluble in water, but a three per cent. solution of soap in hot water dissolves up to five per cent. of carbolic acid and forms an effective disinfecting solution for many purposes. The disinfectant properties of crude carbolic acid are due principally to the presence of cresol.

Cresols.—These are derived from crude carbolic acid by distillation. They are somewhat more efficient than pure carbolic acid. The cresols are but sparingly soluble in water. Various expedients have been resorted to for increasing their solubility, some of which are indicated in the following paragraphs.

Lysol.—This preparation contains about 50 per cent. of cresol rendered soluble with neutral potash soap. It forms clear solutions with water in any proportion, and thus has an advantage over carbolic acid for some purposes. Comparing lysol otherwise with carbolic acid, it is found that its solutions are somewhat cheaper than those of pure carbolic acid, that they are somewhat more efficient, that they are more likely to injure the colors of fabrics, and they are a little less poisonous than solutions of carbolic acid. Lysol is superior to carbolic acid for the disinfection of excreta, and in work of this kind it is a good deodorant. In the

disinfection of tuberculous sputum it is more efficient than carbolic acid as it dissolves and penetrates albuminous masses more rapidly. Its solutions may be used for washing floors, wood-work, etc., and for the disinfection of linen and cotton clothing by soaking in the solutions.

Tricresol.—Is a mixture of three cresols—o-m-and p-cresol. It is soluble in water to about 2½ per cent. only, is more efficient than carbolic acid, and is somewhat less toxic.

Solutol.—It contains 60 per cent. of cresol rendered soluble with cresol-alkali. It is intended for gross disinfection. The results obtained by most of the investigators indicate that it is very efficient, considerably more so than carbolic acid or lysol. It penetrates organic matter and is well adapted for gross disinfection, particularly crude solutol, which is cheap and effective. For general use half a pint of the solution may be mixed with two or three gallons of water.

Creolin.—Its active constituents are the cresols emulsified in a solution of hard soap. The English creolin (Pearson's) contains about 10 per cent. of the cresols. With water a dirty white mixture results. It is a good deodorant and a fairly good disinfectant for fecal matter. The usual strength of its solutions is from 2 to 5 per cent. Little's Soluble Phenyle is probably about the same thing.

Corrosive Sublimate.—Under favorable conditions a rapidly acting disinfectant; but it coagulates albuminous matter and is decomposed by hydrogen sulphide and various other materials. It is, therefore, unsuitable for the disinfection of tuberculous or other sputa, or of excreta. Other disadvantages are that its solutions must be prepared and kept in glass or earthenware, that they will destroy metallic waste-pipes, and that they are very poisonous if swallowed.

The rational use of solutions of corrosive sublimate as a disinfectant is, therefore, restricted to the disinfection of walls, floors, the wood finish of furniture, upholstered furniture, clothing which must be treated with disinfecting solutions, and the personal disinfection of hands, hair, beard and face. The colors of most fabrics are unaffected by them.

Lime.—In the form of lime-wash or "milk of lime" is a good disinfectant for excreta, but it should be used in large

quantity and must have ample time to act. Lime may also be used for the destruction of other offensive organic matter, and the disinfection of walls and other surfaces that will admit of such treatment.

Chloride of Lime.—Is one of the best of disinfectants and may be used for the same purposes as lime. The quantity of its solution used must be in excess of that of the material to be disinfected. Chloride of lime should come from a trustworthy source, should be preserved in hermetically sealed packets, and its solutions should be freshly prepared.

Soap—Potash and Soda.—Soap and water may be used not only for cleansing, but when as hot as can be borne by the hand, or hotter, soap and water or solutions of washing soda have considerable disinfecting power. The discharges from the bowels, or tuberculous sputum may be disinfected with hot lye, 1 part of hard-wood ashes to 2 of water.

Potassium Permanganate.—This cannot be classed with the disinfecting agents which act with the greatest rapidity and certainty. In general disinfection it has no place, but it is used for some special purposes.

Sulphate of Copper. (*Blue Vitriol*). This is a good disinfectant, but the range of its applicability is limited. It may be used for the disinfection of excreta—1 to 2 per cent. solutions—but other trustworthy disinfectants are cheaper.

Sulphate of Iron. (*Copperas*).—This was formerly in use, but it is now known to be worthless as a disinfectant. As a deodorant it is also inferior to some other agents.

Sulphate of Zinc.—This has been shown to have no practical value as a disinfectant.

Chloride of Zinc.—Has some power in restraining the growth of bacteria, but as a real disinfectant it is practically without value.

Gaseous Disinfection.—The idea that the whole work of disinfecting rooms and their contents may be done by the liberation of some disinfecting gas or fumes is a visionary one. It should satisfy only where the work is entirely perfunctory. But gaseous disinfection, particularly the use of formaldehyde, may be regarded as a valuable auxiliary.

Sulphur Fumigation.—It has been shown again and again that, by means of sulphur fumigation, the destruction of

disease germs is uncertain or impossible under the conditions in actual practice. When the material to be disinfected is damp and is enclosed in gas-tight rooms, the gas has some disinfecting action; but ordinary rooms cannot be made gas-tight, and sulphur fumes seriously injure many articles when they are damp. The gas is dangerously poisonous when much of it is inhaled. It escapes from rooms rapidly and a little in adjoining rooms renders them uninhabitable.

For these various reasons the State Board of Health omits sulphur fumigation from the list of disinfecting processes which are recommended.

Chlorine Gas.—Chlorine gas is a more efficient disinfectant than the fumes of sulphur, but it is too destructive to the articles subjected to it to be recommended for general use.

Bromine.—Bromine gas is still more destructive than chlorine, and the disagreeable and dangerous character of liquid bromine renders it unsuitable for the hands of the public.

Formaldehyde.—The experiments made with it in the past few years and the succeeding practical experience in disinfecting work, have shown that formaldehyde gas has advantages over sulphur fumigation or any other gaseous agent. Compared with sulphur, formaldehyde is a more efficient germicide, it is not poisonous, its odor is not so disagreeable, it does not escape from rooms so rapidly as sulphur dioxide, and it has a somewhat greater power of penetration. In ordinary room disinfection it should not be expected to act further than as a surface disinfectant. In small rooms or disinfecting chambers practically gas-tight, with the pieces to be disinfected well separated from each other and with large quantities of formaldehyde, the penetration of the gas is facilitated, and clothing, bedding, etc., may be disinfected with some degree of certainty.

In the disinfection of rooms with formaldehyde, fireplaces, ventilating flues, and other openings must be closed. The rooms should otherwise be made as tight as possible and then they should be flooded quickly. When formaldehyde lamps are used, a pint and a half of wood alcohol to each 1,000 cubic feet of space should be changed to formaldehyde within an hour and a half, and the rooms should be kept closed eight hours or longer.

In the forms of apparatus which volatilize the 40 per cent. solution of formaldehyde, 250 cubic centimetres for each 1,000 cubic feet should be used, and the rooms should be kept closed for the same length of time. Formaldehyde obtained by the volatilization of paraform is just as effective, but costs more. In small enclosed spaces 2 grains should be used for each cubic metre of space, or 30 grains to each 35 cubic feet.

Various uses may be made of solutions of formaldehyde. A 2 per cent. solution (Solution 7) may be used for washing infected surfaces, or for the disinfection of clothing or other articles that may be immersed in it. In gas tight caskets or other small enclosures, articles may be disinfected by pouring in with them upon a cloth to absorb it, formalin, or a mixture of formalin, 1 part; wood alcohol, 1 part; and water, 2 parts. The requisite quantity of formalin is 1 ounce to each cubic foot. Clothing may be disinfected by spraying or sprinkling with solution of formaldehyde and then wrapping it in oilcloth or a rubber blanket. Formalin is the proprietary name of the 10 per cent. solution of formaldehyde, which can be more cheaply bought under the name of solution of formaldehyde as put up by some reputable American manufacturers.

Disinfection with Physical Agencies — A large part of the work of disinfection can and should be done with heat (boiling and steam) as certain, economical, and almost always available, and with sunshine as an auxiliary.

Dry Heat, exemplified in the hot air disinfectors, is untrustworthy and is now but little used.

Boiling for half an hour is a sure way of disinfecting cotton or linen clothing or anything else than can be subjected to this process. Infected material and infected things generally are disinfected more quickly by boiling than with steam disinfection.

Steam Disinfection.—Steam disinfection has the advantage of wetting the goods less than boiling. The mistaken notion is too prevalent that pressure steam is essential to success in steam disinfection. The saving of time is an advantage of using steam under pressure, but for small places the cost of pressure steam apparatus is out of the question. Effective work can be done with flowing steam not under pressure, and in quite

cheap disinfectors. The main requisite is an abundance of live steam streaming through the disinfecting chamber and the enclosed clothing or bedding.

When steam at a pressure of from 5 to 40 pounds is available at a factory or other source, it may be carried into a stationary disinfecting chamber, which can be built at small cost. The State Board of Health will be glad to advise local boards who are interested in this direction.

A portable steam disinfecter may be ordered as follows at a tinman's: Make ~~a~~ of galvanized iron plate like a common tin wash boiler, only have it 22 inches square and 30 inches high. Upon the sides, five inches from the bottom, have brackets attached for the support of a false bottom. This false bottom may be made of heavy galvanized iron perforated with ten or twelve half-inch holes. It should be supported in the middle by a cradle made of galvanized iron wire, or galvanized iron plate, removable for convenience when wiping and drying the bottom. The side brackets for the support of this false bottom should be attached with rivets, so they will not come off if the heat strikes them above the surface of the water, as they might possibly, if used over an open fire outdoors. The part of this steam disinfecter beneath the false flooring must be perfectly water-tight; slight leaks in the part above, which is to be filled with steam, are of not so much consequence. Two strong handles should be placed 18 inches from the bottom on opposite sides. Have two half-inch holes in the cover for the escape of steam.

When using this steam disinfecter put three inches of water into it, put in the false bottom, and above that pack in rather loosely the clothing to be disinfected; put the cover on tightly and steam one hour after the water begins to boil, keeping the water briskly boiling all the time. Many kinds of clothing that would be injured by boiling can be disinfected in this way without injury.

After the steaming, the apparatus should be carried into the open air immediately and the clothing should be thrown over a line. Usually clothing thus treated is not very wet, and will dry in a few moments if spread out in the open air while hot.

This apparatus can be used in most cases upon the cooking-stove, taking off four covers. If in cold weather it is used

outdoors or in an open room, steam would be wasted by the rapid condensation upon the walls, and the disinfection might be a failure. An abundance of steam must stream through the disinfectors the whole hour.

Steam disinfection on a small scale can be done in the common tin wash boiler by supporting a false bottom or floor of laths or thin board above the water with two bricks or otherwise.

Sunshine.—Most disease germs are killed by the action of direct sunshine, but as diffused light acts slowly and not with certainty, this disinfecting agency is limited in its applicability. The complete disinfection of rooms and their contents cannot be attained by the admission of sunlight even when aided by thorough airing. About the only practical use that can be made of sunlight in the work of disinfection is the carrying of upholstered furniture and sometimes other things out into the direct sunshine for several days after they have been otherwise disinfected as thoroughly as possible, and a doubt still lingers as to the completeness of their disinfection. It must be remembered that the sunshine must reach all their parts and that the action of light penetrates but little beneath their surfaces.

DISINFECTING SOLUTIONS.

Solution 1.—For clothing, woodwork, floors, leather, excreta in the sick-room, sputum, the hands, the person.

Solution 2.—For the same general uses as Solution 1. It is a little more efficient than Solution 1; but more likely to injure colors.

Solution 3.—For tuberculous sputum, discharges in the sick-room.

Solution 4.—For excreta, privy vaults, cesspools, etc.

Solution 5.—For the same purposes as Solution 4.

Solution 6.—For clothing, the hands, and the surfaces of walls, floors, furniture, etc.

Solution 7.—For clothing, the hands, etc.

SOLUTION 1.

Carbolic Acid (pure liquified), 7 ounces.
Water, 1 gallon.

Mix. This is approximately a 5 per cent. solution. Its powers is somewhat increased by the addition of from 12 to 14 ounces of common salt to each gallon

when used for the disinfection of excreta, or for other uses where the salt is not objectionable.

For the disinfection of clothing this solution mixed half and half with water will do.

SOLUTION 2.

Lysol, 5 ounces.
Water, 1 gallon.

Mix. This may be used as a substitute for Solution 1, one-half the strength sufficing for uncolored clothing. Many colors are changed by it.

SOLUTION 3.

Solutol (crude or pure), $\frac{1}{2}$ pint.
Water, 2 or 3 gallons.

Mix. This is a very efficient disinfectant for excreta, tuberculous sputum, and gross disinfection generally. If to be used in dwelling houses, or wherever the odor of the crude product would be offensive, pure solutol should be used.

SOLUTION 4.

Chloride of Lime, 6 ounces.
Water, 1 gallon.

Mix. This is about 3 per cent. solution. (Decolorizes and destroys fabrics).

SOLUTION 5. "Milk of Lime."

Slake a quart of freshly burnt lime in small pieces with three-fourths of a quart of water—or to be exact, 60 parts of water by weight with 100 of lime. A dry powder of slaked lime (hydrate of lime) results. Make milk of lime not long before it is to be used by mixing 1 quart of this dry hydrate of lime with 4 quarts of water.

Air-slaked lime is worthless. The dry hydrate may be preserved some time if enclosed in an air-tight container. Milk of lime should be freshly prepared, but may be kept a few days if it is closely stoppered.

SOLUTION 6.

Corrosive Sublimate, 1 dram.
Water, 1 gallon.

Mix and dissolve. Label, *Poison!* This is approximately a 1:1000 solution. One ounce of this solution contains very nearly half a grain of corrosive sublimate.

SOLUTION 7.

Solution of Formaldehyde (Formalin), 6 ounces.
Water, 1 gallon.

Mix. This mixture contains a little less than 2 per cent. of formaldehyde.

APPLIED DISINFECTION.

In the disinfection of infected rooms

and their contents the work cannot usually be well done with a single disinfecting agent or disinfecting process. Special disinfectants and special processes must be employed for special purposes. Thorough work, however, may be done even when the means at one's disposal are but few and simple, but the expense involved in washing the paper from the walls of an infected room will often be more than the cost of the apparatus for using formaldehyde, and the portable steam disinfecter may save many times its cost in a single month. These two—formaldehyde and steam disinfection—should be available in every town.

In disinfection it should be remembered that the success of the work is influenced by:

1. Temperature. Disinfecting solutions generally act more efficiently when they are used warm or hot. A somewhat elevated temperature in a room increases also the activity of formaldehyde when used for its disinfection.

2. Time. This is an important element in disinfection. In the treatment of the discharges in the sick-room or of tuberculous sputum, for instance, disinfecting solutions should act several hours.

3. The quantity of the disinfectant. The volume of disinfectant used as compared with that of the infectious material is often much too small. In the following paragraphs note the directions which relate to temperature, time, and quantity.

Infected House.—At the beginning and during the whole course of a case of infectious diseases, the family and the attendants on the sick should be under instructions as follows, so that as small a part of the house as possible may become infected:

Everything not absolutely needed in the sick-room should be removed from it before the patient is carried to it, or before these superfluous things have become infected. This should apply particularly to carpets, draperies, upholstered furniture, and other things disinfected with difficulty.

All the patient's bed and personal clothing should be disinfected as soon as it is removed.

Every other article carried from the infected room should be disinfected then and there.

Rooms.—In the disinfection of rooms the fact should be kept in mind that the chief task before us is the destruction of

infectious dust. In every movement, therefore, we should be on our guard against the danger of whisking it into the air or diffusing it through other rooms.

Before the disinfection of the rooms themselves is begun, a preliminary sorting out should be done. Some things, clothing and some or all of the bedding particularly, should be removed for separate or special treatment. (See "Clothing," "Bedding," etc.) In the disinfection of rooms, one of two processes may be employed:

1. Disinfection with formaldehyde is by far the most convenient. Properly used it can be trusted to disinfect the exposed surfaces of walls, floors, furniture, etc., and the infectious dust of the room. If there is a probability that infectious sputum has been dried on the walls, floors, or furniture, as is very likely to be true in some cases of diphtheria, scarlet fever, or consumption, the disinfection of the surfaces thus probably soiled is facilitated if they are washed or sprayed with a 2 per cent. solution of formaldehyde (Solution 7) before the disinfection with formaldehyde gas is begun. (See "Formaldehyde.")

2. If formaldehyde disinfection is not available the next most trustworthy process is washing all surfaces with a disinfecting solution (Solution 1, 2, 6, or 7). Floors, particularly, should receive careful treatment and the solution should reach and wet the dust and dirt in the cracks. The ceiling may be brushed with a damp cloth to remove infectious dust and stray cobwebs. The walls should be wiped carefully with a sponge or cloth squeezed out of a disinfecting solution. When the walls are papered, it will be a case of injured walls or incomplete disinfection. The local board or the owner must decide.

With the cloth dampened in the solution wipe the dust carefully from all horizontal or other surfaces that can harbor it, furniture, moldings, doors, windows, etc. (See "Furniture.")

Cotton and Linen Clothing.—The most trustworthy agency for the disinfection of clothing generally is moist heat—steam or boiling. Steam disinfection wets the goods less than boiling, does not shrink woollens so much, and is less likely to change the colors of fabrics. Boiling for one-half hour insures the disinfection of all clothing thus treated.

When infected bed or body linen is re-

moved, it may be treated differently according to circumstances. If stained, it should be soaked some hours in a disinfecting solution at a temperature not exceeding 120° F. For this purpose Solution 2, half strength, is especially appropriate as having the properties of a soap and a disinfectant; or Solution 1, mixed with an equal quantity of soap and water, may be used. Subsequent boiling, as in the ordinary laundry processes, will complete the disinfection. Unstained clothing may be immersed in Solution 1, 2, or 7, one-half strength, or in Solution 6, and then treated as already advised, or it may be transferred immediately to the wash boiler or steam disinfecter. If Solution 6 is used, the clothing should be taken from it and well rinsed before it is transferred to the wash boiler.

Clothing which has been immersed in the disinfecting solution, or is otherwise wet, is not readily penetrated by the heat in steam disinfection. In transferring infected clothing from the sick-room, it should be wrapped in a sheet wet in a disinfecting solution, or in simple water if the disinfecting solution is not at hand. Infected clothing should never be sent to public laundries.

Woolen Clothing.—Disinfect with steam when available; when not, in solutions as under "Cotton and Linen Clothing," or with large doses of formaldehyde in small, tight, enclosed spaces. (See "Formaldehyde.")

Bedding.—When steam disinfection is available, quilts, comforters, blankets, pillows, etc., should be treated in it and mattresses also if the apparatus is large enough. In the absence of a steam disinfecter, proceed as follows:

A. The room is to be disinfected with formaldehyde.

Even if formaldehyde is to be used, counterpanes, quilts, comforters, blankets, sheets, and pillow-cases should be removed for steam disinfection in the wash boiler, or in Solution 1, 2, 6, or 7. If these articles of bedding are left in the room their disinfection with formaldehyde will be uncertain, and the same will be true of that part of the surfaces of furniture and floors covered by them.

Disinfect pillows and feather beds with steam in the wash boiler or with large doses of formaldehyde in small enclosures that are practically gas-tight, as a small closet or tight dry goods box

pasted if necessary, or an oilcloth bag. (See "Formaldehyde.")

Leave mattresses upon the bedstead wholly exposed to formaldehyde when the room is disinfected. If the mattresses have been soiled by the penetration of discharges, as sometimes happens in cases of typhoid fever, the owners should be advised to burn them. The only safe alternative is the injection of large quantities of formaldehyde (the gas or formalin) into their interiors while they are enclosed in a gas-tight covering.

Mattresses of but little value should be burned if the facilities for their sure disinfection are not at hand.

The contents of straw beds should be burned. The ticks may then be disinfected as for clothing.

B. The room is not to be disinfected with formaldehyde.

Proceed as in A with the exception that the surfaces of bed mattresses should be washed with a sponge or cloth squeezed out of Solution 1, 2, or 6.

When practicable the removal of the larger pieces of bedding should be through a window into the open air instead of through other rooms.

Furniture.—The rules may here also be arranged under two subheadings.

A. Formaldehyde is to be used.

Then simply leave all pieces of furniture in the room, all their parts well exposed to the action of the gas.

B. Formaldehyde is not available.

The disinfection must then be done with disinfecting solutions (Solution 1, 2, or 6). Dip a large, soft sponge or cloth into the disinfecting solution and, squeezing it out more or less according to the nature of the articles to be disinfected, wash or wipe carefully every part of the surface of the woodwork of furniture, its upholstered parts, leathern, glass, or metallic* articles and toys. Toys of little value should be burned. Upholstering and the unfinished backs of furniture should be thoroughly washed. Pictures covered with glass may be rubbed with a dampened cloth. Uncovered pictures should be wiped with a soft, dry cloth. All parts of furniture where dust has lodged should receive careful and thorough treatment.

After this treatment upholstered furni-

*Solution 6 should not be used on metallic or gilt articles.

ture should be carried out-doors and exposed to direct sunshine several days.

Rugs and Carpets.—Disinfect rugs with steam or with formaldehyde, as under "Bedding—A." Fur rugs must not be subjected to steam.

If, unfortunately, a carpet was left upon the floor of the sick-room it should be removed before the room is disinfected and treated as follows:

A. By steam disinfection if a steam disinfecting chamber of ample size is available.

B. If steam disinfection is not available, subject it to formaldehyde, as under "Bedding—A."

C. If neither steam nor formaldehyde can be used, spray or sprinkle the carpet upon both sides until it is thoroughly wet with Solution 1, 6, or 7. Besides these processes the only safe alternative is burning and this is advisable for rugs and carpets of little value.

Furs, Skins, Etc.—These can be efficiently disinfected only with formaldehyde, as under "Bedding—A," or by spraying or sprinkling very thoroughly with a disinfecting solution.

Boots, Shoes and Other Leathern Articles.—Wash in Solution 1, 2, 3, or 6, or expose to formaldehyde.

Excreta.—In the sick-room the discharges from the bowels may be treated with any of the solutions given in this circular save Solution 6 and 7. Solution 3, 2, or 4 is slightly preferable when obtainable.

Disinfecting solutions should act three or four hours at least. A still longer time is better. The quantity of 1, 2, or 3 used should be at least twice the volume of the discharge. If 4 or 5 is used the quantity should be much larger. The intimate mixture of the disinfecting solution and the material to be disinfected is important.

A sure way to disinfect fresh excreta is to pour upon it in the vessel at least four or five times its volume of boiling water, to cover the vessel, and to let it stand until cool.

Privy Vaults.—Disinfect with Solution 4 or with "milk of lime" prepared as whitewash is made, or as is directed for Solution 5. It should be used in large quantity sufficient to saturate thoroughly the contents; and after the vault is emptied, gallon after gallon should be poured in until the ground beneath the privy is

thoroughly saturated with the milk of lime.

Cesspools.—Disinfect as under "Privy Vaults."

Water Closets.—If they have received infections discharges the bowls should be scrubbed out with Solution 1, 2, or 3.

Sputum.—Fresh tuberculous sputum is hard to disinfect. It may be received on pieces of rag or paper and burned. In spittoons it may be disinfected with Solution 2, 3, or 4. The efficiency of these solutions is increased by using them hot, and that of Solution 1 by acidifying it with hydrochloric acid (2 ounces to 1 gallon of the solution,) or by the addition of common salt (12 to 14 ounces.) These solutions should act twenty-four hours. This necessitates several spit-cups or spittoons for the patient.

Tuberculous sputum may also be disinfected by filling the spittoon with boiling water, covering it, and letting it stand until it is cooled. The cleansing of the spittoon is facilitated by the addition of washing soda before the hot water is poured in.

The treatment of other infectious sputa should be the same as that of tuberculous sputum.

Corpses.—Wrap in a sheet wet in Solution 6, 7, or 2, and bury as speedily as possible.

Mouth and Throat of Nurses and Attendants as a Prophylactic.—Rinse in 1 per cent. solution of formalin, or five drops of formalin in one ounce of water.

Clothing of Nurses and Physicians.—Steam is preferable. For the physician's suit, two or three ounces of formalin may be poured on a rag beside it in a tin wash boiler or gas-tight box of about the same size. Close tightly. Leave over night. It cannot be worn until thoroughly aired.

REVIEW OF DISEASES FOR JULY, 1898.

(SEVENTY-EIGHT COUNTIES REPORTING.)

Eighty-one counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of July the following diseases have been reported from the counties named:

MEASLES.—Ashe, in all parts; Burke, 1; Davidson, 10; Halifax, 10; Pitt, a few; Rockingham; Sampson, 1; Wake, 1; Wayne, 3—9 counties.

WHOOPIING-COUGH.—Ashe, in all parts; Davidson, 200; Granville; Greene, 40; Halifax, 10; Jones; Mitchell, 15; New Hanover, 6; Onslow, 6; Orange 6; Pasquotank, 7; Pitt, in the northern part; Rockingham; Vance, a few; Warren, several; Washington, 9; Yadkin, many—17 counties.

SCARLET FEVER.—Rockingham, 12.

DIPHTHERIA.—Surry, 2; Union, 1.

TYPHOID FEVER.—Ashe, 1; Beaufort, 3; Buncombe, 1; Burke, 14; Cabarrus, 25; Caldwell, general; Catawba, 12; Chatham; Chowan, a few; Clay, 5; Cleveland, 2; Cumberland, general; Davidson, 4; Edgecombe, 5; Forsyth, in all parts, of mild character; Gaston, general; Greene, 10; Guilford, a large number; Halifax, 6; Harnett, 50; Haywood, 11; Henderson, 8; Hertford, 11; Iredell, general, of mild type; Jackson, 23; Jones, 1; Lincoln, in the west; Macon, 15; Madison; Martin; Mecklenburg; Mitchell, epidemic in the east and west, 25 cases; Nash, a few; New Hanover, 8; Northampton, in all parts; Onslow, 1; Orange, 3; Pasquotank, 19, of mild type; Pender, 6; Perquimans, 30; Pitt; Randolph, 20; Richmond, 5; Rockingham; Rowan, in all parts; Rutherford, a number; Sampson, general; Stokes, 13

in the west; Surry 12; Swain, 3; Transylvania, 1; Union, 10; Vance; Wake, 11; Warren, a few; Washington, 1; Watauga, 15 or 20; Wayne, 4; Wilkes, general; Yadkin, 10; Yancey, a few—60 counties.

MALARIAL FEVER.—Bertie; Cabarrus, in many parts; Chatham; Columbus; Cumberland, in all parts, general; Davidson, general; Davie; Gaston, a few; Gates; Granville; Greene, general; Halifax; Harnett, general; Hertford; Iredell, general; Jones; Lincoln, along streams; Martin; Nash; New Hanover, general; Northampton, general; Onslow, general; Orange, several; Pender, in the east; Perquimans; Person, mild; Rowan, general; Sampson, general; Union; Vance; Warren, general; Wayne, general; Wilson, general—33 counties.

MALARIAL FEVER, PERNICIOUS.—New Hanover, 1; Onslow, 1.

MALARIAL FEVER, HEMORRHAGIC.—Harnett, a few cases; Hertford, 2; New Hanover, 1; Perquimans, 2.

DIARRHOEAL DISEASES, INCLUDING DYSENTERY.—Chowan, general; Gates; Harnett, general; Haywood, general, of mild type; Henderson; Jackson, general; McDowell; Moore, general, mild; Sampson, general; Surry; Union, general, severe; Vance; Yadkin.—12 counties.

SMALLPOX.—Durham, 2; Iredell, 11; Rockingham, 1.

CHOLERA IN HOGS.—Gates; Hertford.

CHOLERA IN CHICKENS.—Surry.

No diseases of importance are reported from Alexander, Bladen, Carteret, Cherokee, Franklin (less sickness than for twenty years), Johnston and Polk. No reports have been received from Alamance, Anson, Brunswick and Craven.

**Summary of Mortuary Reports for July,
1898 (Twenty-four Towns).**

Only those towns from which certified reports are received are included:

	<i>White. Col'd. Total.</i>		
Aggregate population	87,548	66,075	153,623
Aggregate deaths	92	108	200
Representing temporary annual death rate per 1,000	12.6	19.6	15.6
<i>Causes of Death.</i>			
Typhoid fever	3	5	8
Malarial Fever	0	5	5
Whooping-cough	2	0	2
Measles	0	1	1
Pneumonia	1	0	1
Consumption	8	26	34
Brain diseases	7	6	13
Heart diseases	5	6	11
Neurotic diseases	1	2	3
Diarrhoeal diseases	28	15	43
All other diseases	34	38	72
Accident	3	4	7
	<hr/> 92	<hr/> 108	<hr/> 200
Deaths under five years	34	34	68
Still-born	6	12	18

Mortuary Report for July, 1898.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH- RATE PER 1 000.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-Cough.	Measles.	Pneumonia.	Con- sumption.	Bre In Dis-eases.	Heart Dis-eases.	Neurotic Dis-eases.	Diarrheal Dis-eases.	All Other Dis-eases.	Accident.	Suicide.	Violence.	TOTAL DEATHS		Deaths Under 5 Years.	Still-born.
		By Races.	Total.																		By Races	By Towns.		
ASHEVILLE	W.	8,000	13,000	15.0	18.4											5	3	2			10	10	5	1
Dr. M. H. Fletcher.	C.	5,000		24.0								2									10	10	1	
CHARLOTTE	W.	17,153	26,153	6.3	11.5	1			1				1			2	5				9	15	5	1
Dr. F. O. Hawley, II. O.	C.	9,000		21.3							3					6	1				16	15	9	2
DURHAM	W.	4,000	6,000	12.0	11.0											2					4	4	2	
Dr. J. M. Manning.	C.	2,000		18.0						1		1				1					3	4		
FAYETTEVILLE	W.	3,500	4,000	10.6	20.0	1										5	1				6	10	1	
Dr. J. V. McGougan.	C.	2,500		19.2							1					1	1				4	4		
GREENSBORO	W.	5,500	8,000	15.3	13.5							1				3	3				7	7	4	
J. S. Michaux, City Clk.	C.	2,500		9.6							1			1		1					2	9	1	3
HENDERSON	W.	2,250	4,250	2.3	19.8	1										2	1				3	7	2	1
Dr. Goode Cheatham	C.	2,000		18.0							1	1				1	1				3	4		
HILLSBORO	W.	400	700	10.0	51.4																6	3		
Dr. C. D. Jones.	C.	300		0.0												3					6	0		
LENOIR	W.	900	1,200	0.0	0.0																0	0		
Dr. A. A. Kent.	C.	300		0.0																	0	0		
MARION	W.	800	1,050	0.0	0.0																0	0		
Dr. B. A. Cheek.	C.	250		0.0																	0	0		
MONROE	W.	1,800	2,400	6.7	16.0											1	2				1	3		
Dr. J. M. Blair	C.	600		40.0												1	2				2	3		
NEWBERN	W.	3,500	9,500	21.0	25.3	1		3				3	2	1		1	2				7	20	5	1
Hugh J. Lovick, C. Clk.	C.	6,000		29.0							6					1	2				13	20	2	3
OXFORD	W.	1,200	2,300	40.0	11.7				1							1	2				4	8	3	
Dr. G. A. Coggeshall.	C.	1,100		43.6									1			1	2				4	4	3	
RALEIGH	W.	8,500	6,000	12.7	15.0							2	1	2		1	3				9	20	2	3
T. P. Sale, Clerk B. H.	C.	7,500		17.6							3	1				6	1				1	20	3	3
ROCKINGHAM	W.	1,300	1,750	0.0	6.9																6	1		
Dr. W. M. Fowlkes.	C.	450		26.7													1				1	1		
ROCKY MOUNT	W.	1,600	2,600	7.5	9.2												1				1	2		1
Dr. G. L. Wimberley.	C.	1,000		12.0			1										1				1	1		
SALEM	W.	4,100	4,550	2.9	5.3												1				1	2		1
S. C. Butler, Mayor.	C.	450		26.7													1				1	1		
SALISBURY	W.	4,000	6,000	12.0	22.0						1					2	1				4	11		1
Dr. W. L. Lump.	C.	2,000		42.0		1					3		1			1	1				1	1		
SCOTLAND NECK	W.	775	1,200	15.5	20.0			1									1				1	2		
J. A. Perry, Mayor.	C.	425		28.2																	1	1		
TARBORO	W.	1,200	2,500	10.0	1.8	1															0	1		
Dr. L. L. Staton.	C.	1,300		0.0																	0	1		
WARRENTON	W.	970	1,820	0.0	0.0																0	0		
Dr. P. J. Macon	C.	850		0.0																	0	0		
WASHINGTON	W.	3,000	5,500	16.0	19.6							1	1	1		1					4	9		2
Dr. D. T. Tayloe.	C.	2,500		24.0							3	2									5	9		
WELDON	W.	700	1,150	17.1	16.5												1				1	2		
J. T. Gooch, Mayor.	C.	750		16.0																	1	1		
WILMINGTON	W.	104,000	25,000	15.6	14.4	1						1	1	1		3	7				13	32	7	
Dr. W. B. McMillan.	C.	15,000		15.2								2	1	1	1	2	11				19	32	7	
WILSON	W.	2,100	1,700	10.0	15.3							1	1								2	6		
Dr. A. Anderson.	C.	2,300		20.9													2				4	4		

N. B.—The reporters for the cities and towns printed in **BLACK TYPE** have signed this certificate: "I hereby certify that this report gives the whole number of deaths occurring within the corporate limits during the above month."

*In addition, 8 visitors died of consumption and one of pernicious anæmia.

County Superintendents of Health.

Alamance	Dr. J. K. Stockard.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Amson	Dr. E. S. Ashe.	Lincoln	Dr. W. L. Crouse.
Ashe	Dr. L. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. D. T. Tayloe.	Macon	Dr. S. H. Lyle.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. Gilbert McLeod.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. D. M. Moser.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan	Dr. R. H. Winborne.	Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moyer.
Craven	Dr. L. Duffy.	Polk	Dr. C. J. Kenworthy.
Cumberland	Dr. J. Vance McGongan.	Randolph	Dr. T. T. Ferree.
Currituck	No Board of Health.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames.	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. W. L. Crump.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCannless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. W. J. Judd.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. P. J. Macon.
Harnett	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watanga	Dr. W. B. Conncill.
Henderson	Dr. J. G. Waldrop.	Wayne	Dr. Jas. H. Powell.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. M. Turner.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. J. H. Wolff.	Yancey	Dr. J. L. Ray.

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your County on or before the third of each month, that he may use it in making his report to the Secretary of the State Board]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough _____ Typhoid Fever _____

Measles _____ Typhus Fever _____

Diphtheria _____ Yellow Fever _____

Scarlet Fever _____ Cholera _____

Pernicious Malarial Fever _____ Small-pox _____

Hemorrhagic Malarial Fever _____ Cerebro-spinal Meningitis _____

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks : _____

_____ M. D.

_____ 18_____ N. C.



BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, at Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.
S. WESTRAY BATTLE, M. D., Asheville.
W. H. HARRELL, M. D., Williamston.
JOHN WHITEHEAD, M. D., Salisbury.

C. J. O'HAGAN, M. D., Greenville.
J. D. SPICER, M. D., Goldsboro.
J. L. NICHOLSON, M. D., Richlands.
A. W. SHAFFER, SAN. ENG., Raleigh.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIII.

SEPTEMBER, 1898.

No. 6.

TUBERCULOSIS.

We have received the following copy of a minute from the proceedings of the Thirteenth Annual Meeting of the Conference of State and Provincial Boards of Health of North America, held at Detroit, August 10th and 11th, 1898:

The chair appointed Drs. Bryce, Baker and Swarts, who, in due time, presented the following resolution, which was, on motion, adopted:

WHEREAS, It is the unanimous voice of the Conference of State and Provincial Boards of Health of North America, that, since tuberculosis, which causes on this continent more deaths than all other contagious diseases together, is now recognized by all scientific and medical authorities as both curable and preventable, and

WHEREAS, Since the onset of the disease depends especially upon hereditary weakness, and on malnutrition induced by overcrowding, bad ventilation, and over-pressure in school, social and commercial life; and

WHEREAS, Since the presence in the homes of the poor of so many cases of this chronic disease means about certain death to the patient, and probable infection of other members of the family, be it therefore,

Resolved, That this Conference does publish, and instruct the Secretary to for-

ward copies of these resolutions to the legislatures, departments of education, and municipal authorities, of the several States and Provinces represented in the Conference, urging upon them the imperative need of—

1. Having all schools and colleges placed under medical supervision with regard to ventilation, over-crowding and over-pressure in studies.

2. Having all hotels, boarding-houses and workshops where consumptives may be employed, placed under municipal supervision and inspection.

3. Urging all State legislatures to devote public funds, and encouraging private philanthropy, in the establishment of homes or sanitarium in one or more counties or districts of the several States and Provinces to which patients may be sent early, either at their own or municipal expense, and under proper regulations be encouraged to remain there until recovery shall have taken place, while at the same time they shall have prevented the continuance of centers of infection in their homes.

Dr. C. A. Lindsley, Connecticut: I believe that this resolution should be in some way published at once. I do not think it should be held until published in the regular proceedings. I move that the Secretary prepare copies of this resolution at his earliest convenience and send them to every State and Provincial Board of Health, that they may have opportunity

to bring the matter before their legislatures.

Motion was seconded and carried.

We cordially endorse the recommendations made, especially the two first, but we fear that the third, in the present state of public opinion, at any rate, is Utopian. The cases of tuberculosis are so numerous that, admitting unusual liberality on the part of our legislature, only a very small fraction could be cared for in sanatoria. We have been making some crude figures for our own State and the expense involved is simply appalling. Estimating the population of North Carolina at 2,000,000 and the annual death rate at 15 per thousand, there are 30,000 deaths in the State annually. The usual proportion of deaths from tuberculosis to the whole number of deaths is generally agreed to be one in seven. That would make over 4,000 persons dying of that disease every year. Previous to death they were of course in the last stage of the disease, and therefore, virulent foci of infection and should, according to the resolution, be removed to the sanatoria to prevent infection of other members of the family. Taken at this stage very few cures could be hoped for, but owing to scientific care and treatment, many would be carried over to the next year, and the number of this class would therefore be still larger the second year. On a basis of 4,000 deaths it seems to us fair to assume that there are twice as many in the intermediate and incipient stage, and as they hold out a hope of cure they ought of course to have the advantages of the sanatoria. So that the total number in sight to be cared for is 12,000. To allow for any exaggeration let us deduct $33\frac{1}{2}$ per cent. That would leave 8,000. If 25 per cent. of these are able to attend a private institution, 6,000 would be left to be cared for by the State. At \$150 per patient, the cost for maintenance would be \$900,000 per annum—counting in interest on plant and

incidentals we will call it one million—which is about the present total cost of our State government including its eleemosynary institutions. Of course everything has to have a beginning, and the outlay at first would be small and the good accomplished in proportion, but it is very difficult to make a beginning when the end is so far out of sight.

We do not wish to be understood as opposing sanatoria for consumptives. We cordially approve every effort to induce their establishment by private capital and think it would be wise to encourage especially such as could be availed of by the large number of people of moderate means. But we must confess that in our judgment it would be unwise in this State, and we believe in many others, to agitate for their establishment and maintenance by the State. We would be laughed at by most legislators as visionary doctrinaires, and our influence with them in general sanitary matters would be greatly weakened. We would almost surely diminish our power to accomplish in other and more practical ways the object we have in view. Let us suppose (a most violent supposition in this latitude) that the legislature could be induced to appropriate annually for ten years \$10,000 for preventing and curing tuberculosis. How could it be spent to the best advantage? In maintaining we will say, 100 patients in a sanitarium, or in educating the people thoroughly on the subject? In the latter assuredly. If we had \$10,000 a year for that purpose we could employ at salaries sufficient to guarantee good men, two assistants whose duty it would be to devote themselves to that work, by visiting every city and town, and while there urging upon the municipal authorities the importance of taking the matter in hand and telling them how to do it, by popular addresses to the people, by visiting the schools and suggesting the best means for ventilating them, at the same time instructing the teacher, by

visiting the workshops and impressing upon the men who generally rent houses the danger of taking a house in which a case of consumption had occurred unless it had been thoroughly disinfected, by attending religious conferences and associations and enlisting the sympathy and interest of the ministers in the cause by securing through personal appeals the aid of every publisher of a newspaper in spreading before his readers information on this vital subject, and most important of all probably, by obtaining, through face to face discussion, the assistance of the physicians, who will not respond to printed appeals as they would to those made in person. They could also organize societies among the ladies, who are always most active in every good work for advancing the cause. They could see that literature on the subject was thoroughly distributed and in many other ways arouse the people first to the *reality* of the infectiousness of consumption, and having done that, induce them to take precautions to prevent its spread. After several years of thorough missionary work of this kind, public sentiment would support, perhaps, the establishment of public sanitarium. But if their work were well done, they would in the course of it have established, without cost to anybody, thousands of miniature sanitarium in private families, for, after all is said, the management of the disease is summed up in the general care of the health, with special emphasis upon the care of the sputum and upon the necessity for the greatest abundance of fresh, pure air and sunshine.

By such means as we have roughly and imperfectly outlined, we believe that ten times as much could be accomplished in preventing the spread of tuberculosis with the same amount of money as could be done through sanitarium. God speed every effort to stay the "great white plague"

which robs so many of our homes of their loved ones, but let us be sure that our efforts are wisely directed.

TYPHOID FEVER.

This is the season of the year when typhoid fever is most prevalent among us, and we gladly avail ourselves of the opportunity to print below a most interesting account of the effect upon this disease of the purification by sand filtration of the public water-supply of the city of Lawrence, Mass. It is a striking object lesson and impresses most strongly the value of pure water. Sand filtration is of no practical moment to our individual readers, but they can see that their private water-supply is kept free from contamination, or can, if they have reason to suspect it, purify it by boiling. It should be remembered that infection of the water-supply comes nearly always from the undisinfected bowel discharges of a case of typhoid, which leach into the well, and therefore the precaution of disinfecting them should never be omitted.

A BRIEF REVIEW OF THE WORK OF THE
SAND FILTER AT LAWRENCE, MASS.,
BY H. W. CLARK, CHEMIST STATE BOARD
OF HEALTH OF MASSACHUSETTS.

Lawrence is a New England manufacturing city, situated upon the Merrimack river, and with a population at the present time of 55,000 people. A dam just above the city holds back the water of the river, and by means of two canals, one on each side of the river, the water power thus controlled is distributed to the large mills lining the river for nearly a mile on the north bank, and for about half that distance on the south bank. This water power has been the great factor in building up the city, and its development began in the year 1845.

Up to 1875, the water of the city used for all domestic purposes was obtained from ordinary shallow wells. In this year, however, a public water-supply sys-

tem was constructed, and the water pumped to the reservoir and distributed to the citizens was taken from the river at a point about one mile above the city. Nine miles up the river from this intake of the new system was the city of Lowell, at that time having a population about the same as that of Lawrence to-day, but now containing 85,000 people. The sewage of Lowell was then, and is now, discharged into the river, and above Lowell are other cities and towns also discharging their sewage into the river and its tributaries. The water supplied to the people of Lawrence by this system was, from the beginning, badly polluted, but was evidently purer than the average well water previously used, as shown by a considerable decrease in the death rate of the city following its introduction.

Gradually, however, typhoid fever became more and more prevalent, and, finally, the death rate in the city from this disease became the highest in the State, being about three times as great per 10,000 inhabitants as in the average city of the State. Lowell, also taking its water supply from the river, had a death rate from this disease nearly equal to Lawrence. During August, September and October, the months when typhoid fever was most prevalent in other cities, Lowell and Lawrence were affected to about the same degree as the other cities, but instead of decreasing in the following months, the number of cases rapidly increased in Lowell and Lawrence, and for year after year; the height of the epidemic being generally reached in Lawrence in January of each year, while in Lowell it was a month earlier.

Thus in 1891, there were ninety-three cases of typhoid fever in Lawrence in January, forty-five in February, and fourteen in March. The average number of cases in August, September and October of that year was six.

In 1892, there were but seven cases in January, there being, however, thirty-two in the previous month, twenty-four in February, twenty-eight in March, and twenty-one in April. In August, September and October, the average number was six per month.

In 1893, there were seventy-two cases in January, twenty-three in February, and eight in March, while the average number of cases in August, September and October was six per month.

It was well recognized by this time that the cause of these epidemics of typhoid fever during the months of the year when the other cities of the State were comparatively free from this disease, was the polluted water-supply, and the question of a new supply began to be agitated. In the meantime investigations in regard to the purification of Merrimack river water by sand filtration had been carried on at the Lawrence Experiment Station of the State Board of Health and had resulted so satisfactorily that, as early as 1891, the city was advised to construct a sand filter large enough to filter its entire water-supply, and in 1892 the city government made an appropriation for beginning its construction under the direction of the State Board of Health. This filter was designed by Mr. Hiram F. Mills, a member of the State Board of Health, and its construction has been described by him in an article published in the report of the board for 1893. It is an uncovered filter with one bed 2.5 acres in area, only partially underdrained, and with underdrains and depths of sand so arranged that the water, to reach these underdrains, must pass through five feet of sand. It is built by the side of the river, and its surface is two feet below low water in the river, and can thus be flooded by gravity to a depth of two feet. The underdrains and sand are placed directly upon a mud bottom.

It was known at the time of construction of this filter that it could be improved upon by the expenditure of more money in its construction, but, as stated by Mr. Mills in his article published in 1894, "considerations of economy and the immense advantages of such a filter, with the probability of this or none, with an unbelieving public, induced the State Board of Health to advise the city to immediately construct such a filter."

Although begun in the fall of 1892, only a small amount of work was accomplished that year, and work upon it did not again begin until May, 1893, when it was pushed to its conclusion in September. The entire cost of construction was \$65,000, very little of the work being done by contract.

Upon September 20, the filter was first put into operation, and from that date up to the present time it has been in continuous use, and not once has the unfiltered river water entered the reservoir or the service pipes of the city water-supply.

It was the intention of the designer that

the filter should be operated as an intermittent filter, that is, that its surface should be uncovered or free from water every day for a period of two or three hours, it being his opinion that better results would be obtained by this method of operation than could be obtained by operating it as a continuous filter; that is, one whose surface is never uncovered, except at times of scraping. The intermittent method of operating is followed during the summer, but in the winter the surface of the filter is seldom uncovered except at times of scraping.

During the year 1894, the first entire year of operation, the bacterial efficiency of the filter was 98.46 per cent.; during 1895, it was 98.22 per cent.; and during 1896, it was 99.32 per cent.

The efficiency of the filter in removing bacteria has always been greater in summer than in winter, the reason for this being that, contrary to the advice of its designer, the filter remains uncovered, and thus unprotected from the severe cold of the winter of the climate of Lawrence. As a result of this exposure, a thick coating of ice forms, and to enable the surface of the filter to be cleaned of clogged and dirty sand, and thus kept in operation, this has to be removed. Its removal is slowly accomplished by the city laborers, and the surface sand very much disturbed during the process. With the force employed, and the management prevailing during the first three winters of operation of the filter, it was necessary, in order to get a sufficient daily volume of water through the filter, to frequently stop removing the thick ice and remove the newly-formed ice, and scrape the beds just previously scraped. During the past winter, however, better management prevailed, and better results were obtained.

I have already given a few figures showing the number of cases of typhoid fever in Lawrence during the different months of the year before the use of filtered water. In the January following the starting of the filter, the number of cases was nine, or one-eighth as many as during the previous January. This fact is more striking when we note that in Lowell during this month there were ninety-nine cases, or three times as many as during the previous January. In January, 1895, there

were ten cases in Lawrence; in January, 1896, six cases; and in January, 1897, two cases.

A more satisfactory demonstration of the effect of the filter upon the health of the people of Lawrence can be made, however, by stating that in 1887 the deaths from typhoid fever were 11.75 per 10,000 of the population; in 1888, 12; in 1889, 13.75; in 1890, 13.33; in 1891, 12.20; and in 1892, 11.11 per 10,000. During 1893 the filter was built, and hence during a portion of the year filtered water was being used. In 1894, however, filtered water was in use during the entire year, and the death rate from typhoid fever was 5 per 10,000; during 1895 it was 3.07; during 1896, 1.86; and the rate for the present year promises to be about the same as for 1896 (1).

That is to say, the average death rate for the six years previous to the construction of the filter was 12.36 per 10,000, while during the three years and ten months following its construction, it has been 2.95 per 10,000 of population, a reduction of 76 per cent. It can be said also, that a number of the deaths reported each year are of operatives in the large mills who, in spite of the warning notices, drink the unfiltered and polluted canal water which is piped into these mills. In fact, it can be said that Lawrence now has one of the lowest death rates from typhoid fever of any city in the State, and has its greatest number of cases during August, September and October, similar to the other cities, and at a period when the filter is doing its best and most satisfactory work in removing bacteria, and giving an effluent beyond suspicion. The cases occurring in these months cannot in any way be connected with the filtered water-supply.

Besides giving a water free from disease germs, the filter is also giving a cleaner water, one more attractive and palatable, and containing but 50 per cent of the organic matter of the river water.

In conclusion, it can be said that the filter has been eminently successful in doing all that it was promised to do.—*The Public Health Journal*.

(1) It was 1.62 per 10,000.

KOCH ON MALARIA.

In thanking Prof. Koch at the close of his talk on a "Physician's Observation in the Tropics," on the evening of June 9th, before the German Colonial Society, department of Berlin-Charlottenburg, Prof. Gerhardt said that "the thoroughly practical, eminently scientific talk of Prof. Koch was what might have been expected from the man who solved the two medical problems of the century, who discovered the cause and made possible the prevention of the great epidemic disease that afflicted mankind for centuries, Asiatic cholera, and who has laid bare the true character, made possible the early and exact diagnosis, and opened the way to what the future surely holds for us, the natural therapy of the greatest scourge of mankind, tuberculosis." In addition, I need only repeat the statement made by Löffler to me, just after the address: "That was a classic lecture—a true, calm, scientific exposition of observed phenomena, in Koch's best style—a model to be imitated by those who have observations to publish," in order to indicate the interest that was manifested in the lecture, and the comments that were heard on it afterward. Prof. Koch has been in German East Africa a year for the German Government, studying Rinderpest. He has not succeeded in isolating the parasite of the disease, and this has been a source of considerable disappointment, but he has been able to demonstrate experimentally that immunization of animals against the disease is possible, and he has made it possible to effect this practically. All this was known, and so the talk was on other subjects. Koch is an acute observer, and he has had his eyes open for the study of diseases peculiar to the tropics. With the solution of the cholera and tuberculosis riddles behind him, what was more natural than that he should devote himself to "malaria," for which the tropics furnish so rich a field; and this subject formed the burden of his observations. He found that 90 per cent. of the malarial fever in the tropics is not like the malaria that is seen in the temperate zone. Only 10 per cent. of the cases ran the typical course of a tertian or quotidian fever. Instead of the sharp decline of the fever after 4 or 6 hours, as is usual in attack of malaria as we know it, in the tropical form the temperature

remains at the acme for 36 hours, sometimes longer, and then descends rapidly, to remain about normal until the next paroxysm, which may take place from 24 to 48 hours afterward. This is the characteristic course of the tropical fever, which occurs, almost without exception, in the tropics when the patient is kept for some time without quinine. The seeming exceptions are due to the fact that, in the tropics, almost any disease that causes fever and is somewhat obscure is diagnosed malaria, and the use of quinin has become so universal that it is extremely difficult to find cases absolutely uninfluenced by the drug in their regular evolution.

Koch has never seen the remittent form of malaria in the tropics, and he seems to consider that the continuance of a febrile temperature between the malarial paroxysms is due to some complication and not to the malaria itself. As to the "black-water" form of malarial hematuria, Koch considers it a symptom of quinin-poisoning, and he does not think that the malarial parasite is ever virulent enough to lead to the disintegration of the red blood-corpuscles and the consequent appearance of blood-pigment in the urine. Koch did not see a single case of the hematuric form in which quinin had not been administered and usually in large doses. As the idiosyncrasy of certain individuals for quinin is well known, it would not be surprising if in certain cases these intense toxic symptoms should develop, though the drug had been given in what would ordinarily not be toxic doses. On this point of quinin-intoxication, producing serious symptoms usually attributed to malaria, Prof. Koch insists, and he is sure that he has good grounds for his opinion. On the other hand he found the prophylactic value of quinin in *proper doses* infallible. He never saw malaria develop in Europeans exposed to the disease who were taking 1 gram (15½ grains) daily of quinin in almost any form. Quinin has, however, been used most injudiciously in the tropics for malaria. When fever developed, quinin was given at once without relevance to the stage of the paroxysm, and ordinarily it was given in increasing doses until signs of quinin-intoxication developed. There is a special stage of the life of the parasite of malaria that is influenced by quinin, while at other times it seems to be unaffected.

The time for the administration of the drug can be best judged with the aid of the microscope. For the tropical form it is curiously enough the so-called sporulation time. The little bodies are really not spores, in the true sense of the word, and consequently they are not more resistant, but they are young and therefore delicate embryonal forms. Before they have reached the size of the corresponding forms of ordinary tertian fever they may be seen in the blood. In the roset-shaped forms, however, Koch has seen them only in the spleen and then they are only about one-third the size of the sporulation(!)-form of tertian. At other stages of the parasite in the red blood-corpuscle it seems to be much smaller than those of of the extra-tropical parasite. For instance, at the end of an attack there is a signet-ring form of the parasite that corresponds to the signet-ring parasite of tertian, but it is much smaller.

As to the manner of conveyance of malaria Koch considers that it cannot be by means of either water or air. He feels sure that it is due to mosquitos. Mosquito-nets were as effective in protecting his party as quinin, and they tested the efficiency of the nets in this respect thoroughly. Malaria is most rife on the coast and at the foot of the mountains where mosquitos are thickest. It usually infects the islands most virulently, but on one of the islands off German East Africa there is no malaria and there are no mosquitos.

The infection is probably not direct from one individual to another through the mosquito, but it has a stage of evolution in the insect. It may be virulent for man only after several generations in the insect. To illustrate this phase of the question Koch detailed his experience with "Texas fever," which he found in Africa, where tradition seems to show that it has been epidemic for several generations, and it is therefore not an importation from America. He repeated the experiments of Prof. Theobald Smith, in Texas, on the "ticks," the insects that convey the disease from animal to animal. He substantiated Smith's observations as to the possibility of young ticks that had never been on affected animals, though raised from the eggs of insects that had been conveying the disease. He sent a young brood to a distant part of the country where Texas fever was un-

known, and, under precautions that would absolutely preclude all possibility of *coincidental infection*, had them placed on animals. He waited a week, then two, but there was no result. At the end of three weeks there was still no sign and he gave up hope, considering his experiments a failure. On the twenty-second day the first symptoms of the disease developed. The substantiation of Prof. Smith's patient, brilliant observations was received with signs of interest that scarcely needed Prof. Koch's cordial words of approving admiration to break into applause. Some such state of affairs Koch considers may exist for malaria also.

As to the therapy of malaria, of course, quinin is a specific, but there would seem to be a hope of immunization, too. Untreated, in healthy individuals, the fever dies out. The next attack is milder, the next still milder, and so on; so that immunity is acquired. The negroes of the mountains know that when they go down to the coast, they will have the fever. The coast-people have acquired immunity. Even without knowing the cycle of the parasite's existence, Koch considers it not impossible that a method of immunization should be found. For rinderpest, though he could not find the parasite, he did show the possibility of immunity being produced. In smallpox, vaccination was effective, and for rabies a complete method of therapy had been found, though the cause of neither was known.

This Prof. Koch considers to be the future of malarial investigations; for, with the discovery of a process of immunization for malaria, colonization could go on in the rich, fertile South African domains undisturbed. The task is worthy of human effort, and opens up a future of much more scientific and utilitarian importance than anything that polar investigation can hope to disclose.—*Berlin Letter in Philadelphia Medical Journal.*

REVIEW OF DISEASES FOR AUGUST, 1898.

(SEVENTY-EIGHT COUNTIES REPORTING.)

Eighty-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Super-

intendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of August the following diseases have been reported from the counties named:

MEASLES.—Ashe, 10; Davidson, 10; Rockingham.

WHOOPIING COUGH.—Ashe, 25; Granville; Jones; Macon; New Hanover, 2; Onslow, 5; Pasquotank, 8; Pitt, in northern part; Robeson; Rockingham; Stokes, 2; Warren; Washington, 3; Wilson, 5; Yadkin, 12—15 counties.

SCARLET FEVER.—Cleveland, 3; Harnett, a few; New Hanover.

DIPHTHERIA.—Bertie, 1; Gaston, several, of mild type; Henderson, 3; Mecklenburg, 1; Perquimans, 1; Rockingham; Sampson, 2, quarantined, with no spread; Wilkes, in many parts—8 counties.

TYPHOID FEVER.—Alamance; Alexander, 1; Ashe, 1; Beaufort, 2; Bertie, 2; Buncombe, 5; Burke, 10; Cabarrus, 20; Catawba, in all parts; Chatham, a few; Cherokee, 2; Chowan, in all parts; Cleveland, 10; Columbus, 2; Cumberland, 9; Davidson, 3; Davie; Gaston; Greene, 14; Guilford, several; Harnett, many; Haywood, 8; Henderson, 2; Hertford, 12; Iredell, in all parts; Jackson, 11; Jones, 1; Lincoln, in the west; McDowell; Macon, 8; Madison, 10; Martin; Mecklenburg; Mitchell, in all parts, epidemic; Moore, 14, in the east; Nash, a few; New Hanover, 9; Northampton, 10; Onslow, 5; Orange, 2; Pasquotank, 9; Pender, 5; Perquimans, 12; Pitt; Randolph; Rich-

mond, 3; Robeson; Rowan, in all parts; Rutherford, in most parts; Sampson, several; Stokes, 20, in the southwest; Surry, 8; Union, 1; Vance, many; Wake; Warren, a few; Watauga, 20; Wayne, 6; Wilkes, in many parts; Yadkin, 3; Yancey—61 counties.

MALARIAL FEVER.—Alamance; Bertie, in all parts; Bladen; Cabarrus; Carteret; Chatham; Chowan, in all parts; Columbus; Cumberland, general; Durham; Gates; Greene, in all parts; Harnett; Hertford; Johnston; Jones, in all parts; Martin, in all parts; Nash, general; New Hanover, general; Northampton, general; Onslow; Orange, general; Pasquotank; Pender, in the east; Perquimans; Person; Robeson; Rowan, in all parts; Sampson; Transylvania, 10; Union; Warren; Washington, general; Wayne, general; Wilson, general—35 counties.

MALARIAL FEVER, PERNICIOUS.—Harnett, a few; Jones, 1; Northampton, 1; Onslow, 5; Washington, 1; Wayne, 4.

MALARIAL FEVER, HEMORRHAGIC.—Harnett, a few; Hertford, 1; New Hanover, 1; Northampton, 1; Perquimans, 2.

DIARRHOEAL DISEASES (including dysentery).—Bladen; Chowan, in all parts; Gates; McDowell; Pasquotank; Sampson; Surry.

SMALLPOX.—Durham, 4; Rockingham; Rowan, 1.

CHOLERA IN HOGS.—Jackson; Swain; Wayne.

STAGGERS IN HORSES.—Bertie.

No diseases of importance are reported from Caldwell, Edgecombe, Forsyth, Franklin, Polk and Swain.

No reports have been received from Anson, Brunswick, Clay, Craven, Cumberland, Duplin, Gates and Halifax.

**Summary of Mortuary Reports for August.
1898 (Twenty-four Towns).**

Only those towns from which certified reports are received are included:

White, Col'd, Total.

Aggregate population	88,649	66,660	155,308
Aggregate deaths...	94	147	241
Representing temporary annual death rate per 1,000	12.7	26.5	18.6
<i>Causes of Death.</i>			
Typhoid fever	7	15	22
Malarial Fever....	6	24	30
Whooping-cough .	0	1	1
Measles	1	0	1
Pneumonia	4	2	6
Consumption.....	4	10	14
Brain diseases.....	4	3	7
Heart diseases ..	3	6	9
Neurotic diseases..	3	2	5
Diarrhœal diseases.	22	26	48
All other diseases..	38	57	95
Accident	2	1	3
	<hr/>	<hr/>	<hr/>
	94	147	241
Deaths under five years	27	65	92
Still-born.....	6	23	29

Mortuary Report for August, 1898.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH-RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-Cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident. Suicide.	Violence.	TOTAL DEATHS.			
		By Races.	Total.	By Races.	Total.																By Races.	By Towns.	Deaths Under 5 Years.	Still-born.
ASHEVILLE	W.	8,000	13,000	10.5	19.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. M. H. Fletcher.	C.	5,000		33.6		3	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
CHARLOTTE	W.	17,153		11.9		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. F. O. Hawley, Jr.	C.	9,000	26,153	17.3	13.4	3	...	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...
DURHAM	W.	4,000	6,000	9.0	6.6	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...
Dr. J. M. Manning.	C.	2,000		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
FAYETTEVILLE	W.	3,500	7,000	10.3	22.0	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. J. V. McGougan.	C.	2,500		38.4		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
GREENSBORO	W.	5,500	8,000	2.2	30.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
J. S. Michaux, City Clk.	C.	2,500		91.2		5	...	1	...	...	...	4	1	...	...	...	...	...	...	...	...	...	...	...
HENDERSON	W.	2,250		10.7		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. Goode Cheatham	C.	2,000	4,250	36.0	22.6	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
HILLSBORO	W.	400	700	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. C. D. Jones.	C.	300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
LENOIR	W.	900	1,200	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. A. A. Kent.	C.	300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
MARION	W.	800	1,200	15.0	10.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. B. A. Cheek.	C.	400		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
MONROE	W.	1,800	2,400	13.3	15.0	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. J. M. Blair	C.	600		20.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
NEWBERN	W.	3,500	9,500	17.1	24.6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hugh J. Lovick, C. Clk.	C.	6,000		30.0		...	...	12	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
OXFORD	W.	1,200	2,300	0.0	5.2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. G. A. Coggeshall.	C.	1,100		10.9		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
RALEIGH	W.	8,500	16,000	15.5	14.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
T. P. Sale, Clerk B. H.	C.	7,500		12.8		...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
ROCKINGHAM	W.	1,300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. W. M. Fowlkes.	C.	450	1,750	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
ROCKY MOUNT	W.	1,600	2,600	30.0	18.5	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. G. L. Wimberley.	C.	1,000		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
SALEM	W.	4,100	4,550	0.0	5.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S. C. Butler, Mayor.	C.	450		53.3		1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
SALISBURY	W.	4,000	6,000	18.0	20.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. W. L. Crump.	C.	2,000		24.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
SCOTLAND NECK	W.	775	1,200	0.0	10.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
J. A. Perry, Mayor.	C.	425		28.2		...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TARBORO	W.	1,200	2,500	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. L. L. Staton.	C.	1,300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
WARRENTON	W.	970	1,755	0.0	6.8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. P. J. Macon	C.	785		15.1		...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
WASHINGTON	W.	3,000	5,500	28.0	40.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. D. T. Tayloe.	C.	2,500		62.4		2	2	...	...	...	...	...	1	2	...	...	...	...	...	...	...	...	...	...
WELDON	W.	700	1,450	0.0	8.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
J. T. Gooch, Mayor.	C.	750		16.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
WILMINGTON	W.	11,000	26,500	20.7	24.9	1	...	...	...	...	...	...	1	3	1	...	...	...	...	...	...	...	...	...
Dr. W. D. McMillan.	C.	15,500		27.6		1	...	...	...	...	...	...	...	3	1	...	...	...	...	...	...	...	...	...
WILSON	W.	2,500	4,800	28.8	25.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dr. A. Anderson.	C.	2,300		20.9		...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...

N. B.—The reporters for the cities and towns printed in **BLACK TYPE** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

*In addition there were, among non-residents, five deaths from tuberculosis and one from abscess of middle ear.

County Superintendents of Health.

Alamance	Dr. W. R. Goley.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Anson	Dr. F. S. Ashe.	Lincoln	Dr. W. L. Crouse.
Ashe	Dr. L. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. D. T. Tayloe.	Macon	Dr. F. L. Siler.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. Gilbert McLeod.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. D. M. Moser.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Panlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan	Dr. R. H. Winborne.	Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moye.
Craven	Dr. L. Duffy.	Polk	Dr. C. J. Kenworthy.
Cumberland	Dr. J. Vance McGougan.	Randolph	Dr. T. T. Ferree.
Currituck	No Board of Health.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames.	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. W. L. Crump.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCanless.
Franklin	Dr. F. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. W. J. Judd.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. T. B. Williams.
Harnett	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Council.
Henderson	Dr. J. G. Waldrop.	Wayne	Dr. Jas. H. Powell.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. M. Turner.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. J. H. Wolff.	Yancey	Dr. J. L. Ray.

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your County on or before the third of each month, that he may use it in making his report to the Secretary of the State Board]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough	Typhoid Fever
Measles	Typhus Fever
Diphtheria	Yellow Fever
Scarlet Fever	Cholera
Pernicious Malarial Fever	Small-pox
Hemorrhagic Malarial Fever	Cerebro-spinal Meningitis

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks:

M. D.

18

N. C.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, at Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.

S. WESTRAY BATTLE, M. D., Asheville.

W. H. HARRELL, M. D., Williamston.

JOHN WHITEHEAD, M. D., Salisbury.

C. J. O'HAGAN, M. D., Greenville.

J. D. SPICER, M. D., Goldsboro.

J. L. NICHOLSON, M. D., Richlands.

A. W. SHAFFER, SAN. ENG., Raleigh.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIII.

OCTOBER, 1898.

No. 7.

THE HEALTH CONFERENCE.

The fifth annual "Health Conference with the People" by the Board will be held this year at Winston-Salem on December 7th, in the Western half of the State, the last having occurred at Goldsboro in the East. The object of these meetings is to bring directly home to the people of our leading centres of population, at least—our limited appropriation not permitting more frequent meetings—the importance and advantages of the practical application of the principles of sanitation. The testimony of the communities with whom the Board has heretofore met is that good has been accomplished in stirring up a more active interest in the subject. The success of these meetings depends largely upon the audience. If it is responsive, and even a few of its number will ask questions and take part in the discussions, it be come, in fact what it is intended to be, a conference, and a snap and interest is infused which must be more or less lacking when all the talking is done by one side. The "Twin City" is well known to be a "live" town, with numbers of active, enterprising, public-

spirited men in it, and we earnestly hope that they will not only attend with all their neighbors of both sexes, but will actively participate in the proceedings and make the conference a success—a benefit we feel sure to themselves and a gratification to the Board.

We are not at this writing prepared to give the programme in full, but a sufficient number of papers on the vital subjects will be presented to make the meeting interesting as well as instructive. It will be published in the local papers at the proper time.

It is particularly desired that not only the local health officers, but those from adjacent communities, attend and take part, and as every conscientious physician is necessarily in fact a health officer we wish our medical readers to feel that they are especially invited.

FORMALIN-SHEET DISINFECTION PROCESS OF THE CHICAGO HEALTH DEPARTMENT.

Thorough disinfection is a *sine qua non* in the prevention of infectious diseases. While our laws require such disinfection to be made in all such cases as a matter of

fact, it is largely voluntary, especially in the rural districts. To induce its general performance, therefore, the process must be both simple and cheap. The formalin-sheet disinfection process recommended by the Health Department of Chicago, a short account of which we printed in our April number, meets these two conditions more completely than any other process of which we have knowledge and we are grateful for the following fuller statement on the subject, which appears in the report of the Department for September.

"At the recent meeting of the American Public Health Association, the subject of disinfection in cities being under discussion, Dr. Adolph Gehrmann, Director of the Laboratory of the Chicago Health Department, made, in substance, the following statements:

"As our time is very limited I shall only presume to consider one phase of this subject, namely, that relating to the disinfection of city houses for contagious diseases.

"In cities, the most unsatisfactory conditions are found. The buildings are not isolated; they are crowded together in the most irregular manner. The construction, in many cases, is very poor, making it very difficult to confine the vapors used in fumigation to the rooms under treatment, or to any particular part of the building; finally, the rooms must be returned as quickly as possible to the tenants and must be in such condition that they can be used during the preparation of the evening meal and for sleeping.

"It has been found that practically a limit of from four to five hours is placed upon the actual time of treatment of rooms. Under these conditions any method that is used must be capable of fulfilling the following requirements: First, the method must be efficient; second, it must be one that can be easily applied; third, it must be as little injurious to those conducting the disinfection and to the occupants of the rooms as possible; fourth, it must be reasonably cheap.

"In the disinfection work of the Chicago Health Department various methods proposed have been industriously studied, and it must be said that it has been most difficult to decide upon a method which will fulfill the requirements and meet the conditions as found. From the first introduction of formaldehyd it was espe-

cially desired to use this method, because its efficiency seemed so certain. A long series of experiments with various methods of utilizing formaldehyd was conducted, but none was found which was entirely satisfactory, chiefly because of difficulties with the apparatus used in its production.

"At this time I desire to call attention to a method of using formaldehyd that was adopted by the Department in March last and which, because of its simplicity and the results so far obtained, seem to warrant its continued use. No special claims are made for it, but it has been so far demonstrated that the results are equal to those where other methods are employed and more quickly and with less difficulty in the manipulations.

"The origin of this method was in the well-known fact that cultures of bacteria can be destroyed, or their growth arrested, by placing a few drops of formaldehyd solution upon the cotton plugs used to close the test tubes containing such cultures. Following out this hint, a series of experiments was made, using various-sized bell-jars in which cultures were placed, and formaldehyd was evolved by placing varying numbers of drops of formalin upon pieces of cloth suspended in the air space within. It was found that the cultures were killed in much the same manner as were those where the formalin was placed upon the cotton plug. On the same general plan rooms were then treated and the method as now used was thus developed.

"This method is briefly as follows: The room is sealed as usual. Several sheets are hung up in the room upon lines stretched across it. These sheets are sprinkled with the forty per cent. solution. The sprinkling is so made that the sheet is covered as evenly as possible with small drops of the solution, separate and distinct from one another. For the purpose of sprinkling, an apparatus similar to a wash-bottle is used. This has a rubber hand-bulb for furnishing the compressed air; the outlet tube has a rose-sprinkler with a number of very fine openings. The spray is thrown against the sheet only once—the surface is not gone over a second time. The amount of formaldehyd solution used is not less than 150 cubic centimeters per thousand cubic feet. This amount is used because of the experiments of Pfuhl, which show that thirty grammes of available formaldehyd to the

thousand cubic feet must be present in order to obtain the killing of bacteria. The time of exposure is not less than four hours and as much longer as the conditions will allow. *

"Repeated tests with cultures exposed in rooms fumigated in this manner have shown that freely-exposed organisms—diphtheria, typhoid and pus cocci—are uniformly killed within the given time and penetration through one thickness of a sheet or blanket has been regularly demonstrated.

"Further disinfection of mattresses and bedding is carried out either by means of the steam-disinfecting van, or by sprinkling them with formalin solution and piling them together, so that the vapors may penetrate throughout the mass and reach all parts of it, while the disinfection of the air is in progress "

"*This period of exposure is arbitrarily fixed by the Department for the guidance of the disinfectors; but there is a reason to believe that the period of exposure is not of so much consequence as the rapidity with which the necessary volume of gas is evolved. Formaldehyd acts promptly, if at all. This explains the discrepancies in the results obtained by different experimenters—one reporting successful results from a short exposure, and another failure with a prolonged exposure. Nevertheless, the four-hours' period is a good working rule in the present stage of development of this method of disinfection."—A. R. R.

A LADY PHYSICIAN'S VIEWS ON BICYCLING FOR WOMEN.

In view of the wide-spread use of the bicycle, and of the fact that its effect upon the health of the rider, especially of the female sex, depends largely upon the way in which it is used, we are glad to be able to reprint the following excellent leading article on the above subject from the last *New York Medical Journal*:

"Much has been written on the subject of the effects of bicycling on the health, especially in women. A fair proportion of it is good, but for the most part the statements made have been too general, enabling us to conclude only that the exercise is good for most women and injurious to only a few. At a meeting of the Sacramento Society for Medical Improvement, held so long ago as last January, the proceedings of which are to be found in the

April number of the *Occidental Medical Times*, Dr. Josephine Calahan read a notable paper on the subject. We think Dr. Calahan falls in too readily with the popular notions that the women of the present day, especially American women, are less healthy than those of former times and that dyspepsia is a distinctively American ailment, but that error, if it is one, does not detract from the value of what she has to say about bicycling.

"One of the chief advantages of bicycle exercise for women, according to Dr. Calahan, is the necessity of their having the dress loose, so as to admit of perfect freedom of movement for all the muscles of the body. By its use, she says, women have learned how much healthier and more desirable it is to be comfortable, and she thinks the bicycle has been the means of doing away with tight lacing and heavy skirts to a greater extent than all the arguments of physicians and of dress-reformers that the world has ever seen. "If," she says, "the wheel never accomplished anything further than this—and the end is not yet—it would be entitled to the thanks of a grateful community."

"Dr. Calahan thinks that bicycling is the best of all stimulants for a sluggish liver and an inactive skin, and an ideal remedy for a capricious or indifferent appetite. It also stimulates both the secretory and the muscular functions of the stomach and intestines, "assisting nature in this respect more naturally and materially than any remedy yet known to our materia medica. By it the stout are made slighter and the thin plump," and when it is used judiciously, "improvement in every fibre and in every organ is sure to follow." She considers bicycling one of the very best remedies for insomnia, but adds that for obvious reasons it would not be practicable in all cases. Generally speaking, in nervous derangements not dependent on any real lesion, but rather on undue mental strain or on the opposite error of an inactive, aimless life, systematic exercise with the bicycle will be found to meet the conditions admirably. It is not contraindicated by all pathological conditions of the abdominal organs, says Dr. Calahan, and we presume she means to include the pelvic contents, but she thinks it safe to say that in all conditions which are inflammatory in character or apt to become so, an exercise so active as bicycling is dangerous and should be avoided.

"Much depends, says Dr. Calahan, on the style in which the bicycle is ridden, and women should be well taught. The lessons should not be more than half an hour long, at first, and more attention should be paid to suitability of costume. The dress should be loose about the waist, with the skirt much shorter than that of an ordinary gown, and the shoes should be high, to give support to the ankles, and with low heels. "Bloomers without a skirt are ungraceful and unnecessary," says Dr. Calahan; "they have no excuse for existence, and are only mentioned here to be condemned." This seems to us a matter of taste, but we quite agree with Dr. Calahan from that standpoint.

"A most important feature of Dr. Calahan's paper, we think, is that which treats of the rider's attitude on the bicycle. A good general rule, she thinks, is to have the machine so adjusted that the weight of the body will be evenly divided between the saddle, the handle-bars, and the pedala's. The saddle should be high enough and far enough back to cause the body to incline slightly forward; the bars should be sufficiently low and so placed that with the hands grasping them the wrists will be extended and the elbows slightly flexed; and the pedal should be so adjusted that when it is nearest to the ground the ankle will be somewhat straightened and the knee slightly bent. By this arrangement the weight is more evenly distributed, better command of the bars and pedala's is obtained, and direct jars to the spine and viscera are obviated. Exaggerated leaning forward is dangerous."

HAWAII FROM A HEALTH POINT OF VIEW.

Hawaii is now American territory, and with its annexation the government has taken upon its shoulders not only the responsibility of ruling, but also the task of looking after the health of its inhabitants and supervising the sanitary arrangements of the island. When the existing condition of affairs as regards matters hygienic and the state of public health generally in Hawaii is taken into consideration, it must be conceded that all the labor will be Augean. For many years the Sandwich Islands have been hotbeds of disease, and, until drastic remedial measures have been put into force, are likely to remain so. In the *Medical Re-*

cord of April, 1889, Dr. Prince A. Morrow, who probably is better acquainted with the subject than any one else, contributed some notes of observation on matters medical in the Sandwich Islands, which, although some few years have elapsed since they were written, will to all intents and purposes apply with equal truth to the present situation there. After referring to the physical and mental characteristics of the natives, Dr. Morrow says: "The demographic effects of introduced diseases in a virgin soil can nowhere better be studied, and they exhibit facts of the most remarkable interest. The natives have proven strangely susceptible to the diseases of civilized life, and trifling ailments, such as measles, whooping-cough, etc., acquire by their transplantation into this soil all the virulence of a fatal pestilence. Measles and whooping-cough, introduced in 1849, almost decimated the population; the mortality was excessive, almost every case terminating fatally. The ravages of small-pox, introduced in 1853, were none the less frightful. In the island of Oahu over fifteen thousand died, and the marshal of the islands informed me that he superintended the burial of ten thousand victims of this disease in Honolulu alone—more than one-half of its entire population. * * * The most important agency in the depopulation of the islands has been attributed to syphilis, which was introduced by Captain Cook and his men in 1778. The licentious habits and promiscuous intercourse of the inhabitants caused it to spread like wildfire through the islands."

Syphilis is still a terrible scourge in Hawaii, but of all the diseases prevalent there the most loathsome and deadly is leprosy. With regard to leprosy, Dr. Morrow says, in 1889: "Nowhere else in the world can be found a parallel to the extraordinary development and rapid spread of this disease, which in the short space of little more than one generation has attained such alarming proportions and proved such a terrible menace to the public health."

That matters have not changed much for the better in this respect, an article by Dr. Burns Foster, in the *North American Review* of September last, would seem to demonstrate. Dr. Foster says: "Leprosy up to 1849 was unknown in the Sandwich Islands, at which date it was introduced by two Chinese sailors, and the disease has spread so rapidly that at

the present time nearly ten per cent. of the Hawaiian natives are lepers."

Dr. Osler takes exception to these extreme views of the prevalence of the disease, but there seems to be no doubt that its ravages are very extensive. Although the lepra bacillus was discovered by Hansen so long ago as 1874, our knowledge with regard to its etiology has advanced but little; authorities are, however, unanimously agreed as to its contagiousness.

These being the facts of the case, what steps should be taken by the government of this country to prevent the spread and to endeavor to stamp out the disease, root and branch? Dr. Foster, in the article referred to above, emphasizes the necessity of creating a department of public health, with a minister in the President's cabinet, and also suggests the appointment of a leprosy commission to investigate the disease on the spot, and to make, so far as is possible, an accurate census of the lepers of Hawaii, and to see that all infected persons are completely segregated. There is yet another important point to be considered, to which Dr. Foster draws attention, that the government must educate the people—the soldiers, civil servants, and those who go to Hawaii for commercial purposes and who are likely to be brought into contact with lepers—in regard to the dangers of infection and the precautions necessary to be taken. The end in view should be the total extinction of leprosy. This result can be attained only by the complete segregation of those afflicted, which is impossible until our knowledge of the etiology of the disease is more precise and accurate than at present. Therefore, the first move on the part of the United States should be the immediate appointment of a properly organized and equipped bacteriological commission. To devise means to extinguish the foul disease of leprosy would redound as much to the glory and credit of America as did the discovery of vaccination to England or discovery of the principle of serum immunization to France.

REVIEW OF DISEASES FOR SEPTEMBER. 1898.

(SEVENTY-EIGHT COUNTIES REPORTING.)

Eighty-six counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of June the following diseases have been reported from the counties named:

MEASELS.—Rockingham.

WHOOPIING-COUGH.—Harnett, a few cases; Macon, 12; Mecklenburg, 6; New Hanover, 5; Onslow, 6; Pasquotank, 2; Rockingham; Vance; Warren, a few—9 counties.

SCARLET FEVER.—Buncombe, 2, strictly quarantined; Granville, 2; New Hanover, 4; Northampton, 2.

DIPHTHERIA.—Alexander, 1; Ashe 3; Bertie, 1; Catawba, several; Henderson, 5, instruction as to quarantine and disinfection, carried out; Jackson, 2; Northampton, 1; Richmond, 2; Rockingham; Rowan, 1; Rutherford, a few; Surry, 4; Washington, 2; Wilkes; Yadkin, 13, mild, in one locality, one death—15 counties.

TYPHOID FEVER.—Alamance, several cases; Ashe, 1; Bertie, 1; Buncombe, 3; Burke, 5; Cabarrus, 10; Catawba, in all parts; Cherokee, 1; Chowan, in several sections; Clay, 5; Cleveland, 14; Cumberland, 7; Edgecombe, 2; Franklin, very little; Gaston, a few; Greene, 12; Guilford; Halifax, 5; Harnett, 20; Haywood, 14; Henderson, 9; Hertford, 3; Iredell, many; Jackson, 5; Jones, 1; McDowell; Macon, 5; Madison, 20; Martin, 2; Mecklenburg, 8; Mitchell, in all parts*, 40 cases; Moore, 10; Nash, a few; New Hanover, 6; Onslow, 3; Orange, 1; Pasquotank, 6; Pender, 1; Pitt; Polk, 6; Randolph, a good many; Rockingham; Rowan; Rutherford, a num-

*We are requested to state that there is no typhoid fever at Linville.

ber; Sampson, several; Stokes, 5; Surry, 10; Vance, several; Warren, a few; Watauga, in all parts, 10 cases; Wayne, 8; Wilkes, in many parts; Yancey, a few—53 counties.

MALARIAL FEVER.—Alamance; Bertie; Bladen; Cabarrus; Carteret; Chatham; Chowan, universal; Columbus; Cumberland, in all parts, general; Davidson, general; Durham, general; Edgecombe; Franklin, general; Gaston, along streams; Gates, several cases; Greene, general; Halifax, general; Harnett, in nearly all parts; Hertford; Iredell, general, the drainage of streams is needed; Johnston; Jones, general; Lincoln, general; Mecklenburg; Moore, along streams; Nash, general; New Hanover, general; Northampton, general; Onslow; Orange, general; Pasquotank; Randolph; Rowan; Sampson, in nearly all parts; Vance, in many parts; Warren; Washington, general; Wayne, in nearly all parts; Wilson, general—39 counties.

MALARIAL FEVER, PERNICIOUS.—Edgecombe, 8; Hertford, 1; Jones, 1; New Hanover, 1; Northampton, many, Union, many; Warren, a few; Washington, 2; Wayne, 3—9 counties.

MALARIAL FEVER, HEMORRHAGIC.—Bertie, 1; Cumberland, 2; Edgecombe, 1; Halifax, 4; Mecklenburg, 1; Onslow, 6; Wayne, 1—7 counties.

MUMPS.—Jackson.

TONSILLITIS.—Swain.

SMALLPOX.—Durham, 6; Rowan, 2.

CHOLERA IN HOGS.—Wayne.

BLIND STAGGERS IN HORSES.—Bertie.

No diseases are reported from Beaufort, Forsyth and Person.

No reports have been received from Anson, Brunswick, Craven, Duplin, Perquimans and Robeson.

Summary of Mortuary Reports for September. 1898 (Twenty-four Towns).

Only those towns from which certified reports are received are included:

	<i>White. Col'd. Total.</i>		
Aggregate population	87,648	67,115	154,803
Aggregate deaths	76	110	186
Representing temporary annual death rate per 1,000	10.4	19.5	14.4
<i>Causes of Death.</i>			
Typhoid fever	4	5	9
Malarial fever	3	15	18
Whooping-cough	0	2	2
Pneumonia	1	1	2
Consumption	9	15	24
Brain diseases	7	2	9
Heart diseases	4	5	9
Neurotic diseases	2	2	4
Diarrhoeal diseases	11	9	20
All other diseases	34	51	85
Accident	1	3	4
	<hr/> 76	<hr/> 110	<hr/> 186
Deaths under five years	28	38	66
Still-born	13	20	33

Mortuary Report for September, 1898.

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEMPORARY ANNUAL DEATH- RATE PER 1,000.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-Cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS. By Races.	By Towns.	Deaths Under 5 Years.	Still-born.
		By Races.	Total.																					
ASHEVILLE	W.	8,000	13,000	22.7							1					1	6				15	4	24	12
Dr. M. H. Fletcher.	C.	5,000		21.6	1							1	5	1	1	2	1				4	3	4	4
CHARLOTTE	W.	17,153	26,153	3.5								1	1	1		2					5	12	4	4
Dr. F. O. Hawley, H.O.	C.	9,000		9.3			1														2	7	12	
DURHAM	W.	4,000	6,000	15.0								1			1	3					2	2	12	
Dr. J. M. Manning.	C.	2,000		12.0											1	1					0	8	12	
FAVETTEVILLE	W.	3,500	4,000	0.0								3		1	1						7	7	8	
Dr. J. V. McGougan.	C.	2,500		33.4	1											2					7	7	8	
GOLDSBORO	W.	4,000	7,000	18.0	1							1		1	1		2				5	11	8	1
D. J. Broadhurst, C.Ck	C.	3,000		20.0			2									2					3	11	8	1
GREENSBORO	W.	5,500	8,000	4.4								2				1	1				6	8	1	1
J. S. Michaux, City Clk.	C.	2,500		28.8	1										1	1					6	8	1	1
HENDERSON	W.	2,250	4,250	0.0													1				0	1	1	
Dr. Goode Cheatham	C.	2,000		6.0																	0	1	1	
HILLSBORO	W.	400	700	0.0																	0	0		
Dr. C. D. Jones.	C.	300		0.0																	0	0		
LENOIR	W.	900	1,200	0.0																	0	0		
Dr. A. A. Kent.	C.	300		0.0																	0	0		
MARION	W.	800	1,200	30.0	1											1					12	12		
Dr. B. A. Cheek.	C.	400		0.0																	0	12		
MONROE	W.	1,800	2,400	6.7												1					1	2	5	
Dr. J. M. Blair.	C.	600		40.0																	2	5		
NEWBERN	W.	3,500	9,500	17.1			3				2										5	15	1	7
Hugh J. Lovick, C.Ck	C.	6,000		20.0			4				1		2		1	2					10	15	1	7
OXFORD	W.	1,200	2,300	20.0												1	1				2	5	1	1
Dr. G. A. Coggeshall.	C.	1,100		32.7					2				1								3	5	2	4
RALEIGH	W.	8,500	16,000	9.9							2					1	4				7	15	4	1
T. P. Sale, Clerk B. H.	C.	7,500		24.0	1						5	1				4	4				15	22	9	1
ROCKINGHAM	W.	1,300	2,700	27.7							1						2				3	1	4	
Dr. W. M. Fowlkes.	C.	450	1,750	26.7							1										1	4		
ROCKY MOUNT	W.	1,600	2,600	15.0								1				1					0	2		
Dr. G. L. Wimberley.	C.	1,000		0.0																	0	2		
SALEM	W.	4,100	4,550	5.8	1												1				2	2	1	2
S. C. Butner, Mayor.	C.	450		0.0																	0	2		
SCOTLAND NECK	W.	775	1,200	0.0																	0	1		
J. A. Perry, Mayor.	C.	425		28.2													1				1	1		
TARBORO	W.	1,200	2,500	0.0																	0	0		
Dr. L. L. Staton.	C.	1,300		0.0																	0	0		
WARRENTON	W.	970	1,750	0.0																	0	1		1
Dr. P. J. Macon	C.	780		15.3													1				0	1		1
WASHINGTON	W.	3,000	5,500	16.0								1		1	2		2				4	5	9	1
Dr. Joshua Tayloe.	C.	2,500		24.0							1				2		2				5	9	1	
WELDON	W.	700	1,450	0.0												2					0	2		
J. T. Gooch, Mayor.	C.	750		32.0												2					2	2		
WILMINGTON	W.	10,000	25,000	9.7	1						1		1		10		16				13	27	40	3
Dr. W. D. McMillan.	C.	15,000		21.6	1		6				1	1				2					3	40	9	3
WILSON	W.	2,500	4,800	14.4							1										3	3		
Dr. A. Anderson.	C.	2,300		26.1			1									4					5	5	4	

N. B.—The reporters for the cities and towns printed in **BLACK TYPE** have signed this certificate: "I hereby certify that this report gives the whole number of deaths occurring within the corporate limits during the above month."

*In addition, there were two deaths of visitors from consumption.

County Superintendents of Health.

Alamance	Dr. W. R. Goley.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Anson	Dr. E. S. Ashe.	Lincoln	Dr. L. A. Crowell.
Ashe	Dr. L. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. Joshua Tayloe.	Macon	Dr. F. L. Siler.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. Gilbert McLeod.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. D. M. Moser.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan	Dr. R. H. Winborne.	Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moye.
Craven	Dr. L. Duffy.	Polk	Dr. H. D. Shankle.
Cumberland	Dr. J. Vance McGougan.	Randolph	Dr. T. T. Ferree.
Currituck	Dr. H. M. Shaw.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames.	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. W. L. Crump.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCanless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. W. J. Judd.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. T. B. Williams.
Harnett	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Council.
Henderson	Dr. J. G. Waldrop.	Wayne	Dr. Jas. H. Powell.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. M. Turner.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. J. H. Wolff.	Yancey	Dr. J. L. Ray.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, at Raleigh, N. C.

GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington. S. WESTRAY BATTLE, M. D., Asheville. W. H. HARRELL, M. D., Williamston. JOHN WHITEHEAD, M. D., Salisbury.	C. J. O'HAGAN, M. D., Greenville. J. D. SPICER, M. D., Goldsboro. J. L. NICHOLSON, M. D., Richlands. A. W. SHAFFER, SAN. ENG., Raleigh.
RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

VOL. XIII.

NOVEMBER, 1898.

No. 8.

THE HEALTH CONFERENCE.

We wish to remind our readers of the fact, announced in our last issue, that this meeting of the Board with the people will be held at Winston-Salem on December 7th, and to extend to them all a cordial invitation to attend and participate. The presence of the ladies is particularly desired, as the practical application of sanitary principles in the home—the centre of our life—lies chiefly with them.

A good programme, embracing papers on Tuberculosis, Smallpox, Water-borne Diseases, Sanitation of Small Towns, Baths and Disease Germs, is already prepared, while others still are expected. But the best part of the programme cannot yet be stated in advance, because it is made at the time by the questions of the audience and the discussions excited thereby. We hope the people will attend.

TUBERCULOSIS AGAIN.

We have no apologies to make for bringing up the subject of Tuberculosis a second time, or any number of times,

for it is the great curse of man, and throws its dark shadow over many, many homes in our State and Country. We have just received from our friend, Dr. Lindsley, the able Secretary of the Connecticut Board of Health, "A Circular issued by the State Board of Health for Public Information," which is simple and to the point, and we are very glad to give our readers the benefit of it. It reads as follows:

"Consumption is the most destructive disease among us. More than a thousand people die from it in this State, every year. Much of this suffering and sorrow can be prevented by proper care on the part of the sick and those who attend them. The disease is a preventable one. It is now known that its cause is a germ called the Tubercle Bacillus. This germ is found in immense numbers in the spit of consumptive patients. When this spit dries, the invisible germs which it contains in enormous numbers, rise and float in the air with the dust, and may be breathed into our lungs. Healthy persons may thus take the disease. *This is the usual mode of infection.* Therefore the key to the control of consumption lies in the immediate and absolute destruction of the infected sputa of all consumptives, for every such person is a producer of consumption seed, which is a living germ of very long and very strong

life. If he sows it broadcast about him in his spittle, it soon dries and floats in the air to re-infect himself and infect others who may breathe in the deadly dust. This germ is not easily killed by disinfectants. They will destroy it only after contact for a long time. Even boiling it for fifteen minutes is not effectual. Burning by fire is the best means of destroying it; fire is infallible. It resists cold, also.

When the spittle of a consumptive has passed out of his possession, he can not recover it. He has sent it on its mission of death with heedless indifference, to find such victims as it may. Public safety requires that any person who has pulmonary consumption should spit NOWHERE except upon or into some receptacle which may be burned with the disease-germs which his expectoration contains. Pocket spit-cups have been invented, but old handkerchiefs, freshly-washed rags or cheap Japanese napkins are admirably adapted for such purpose, and can be burned without loss. If all the sputa of all tuberculous persons, from this time on, could be utterly destroyed, the next generation would, in all probability, be practically exempt from this most fatal malady.

But other precautions are necessary; no person should sleep in a room occupied by a consumptive. Rooms so occupied become infected and have been proved to be the cause of the disease in many cases. Such rooms should be frequently disinfected by scientific methods. The dry broom, the feather duster and all its substitutes, should be rigorously expelled from every consumptive habitation. The damp cloth and the fire should be the chief implements of house-cleaning where consumptives dwell.

Tuberculous mothers should not nurse their children, because the germs are sometimes found in the milk. The milk of tuberculous cows should never be used.

Members of tuberculous families ought to find out of-door occupation. Overcrowding, bad ventilation in houses or shops, employments which make dust, dampness of the soil, increase the liability to tuberculous infection, and are therefore to be avoided.

It would be a general public educator, if there could be hung in street and railway cars, public halls, theaters, business offices and stores, conspicuous notices to this effect:

SPITTING ON THE FLOOR POSITIVELY FORBIDDEN.

They would be constant reminders, and by working a reform in the disgusting habit of spitting, would contribute largely to public safety.

The State Board of Health, believing that any effort to restrict and control the prevalence of Consumption, will be a failure without the hearty and intelligent co-operation of the public, issues this circular in the hope that the information which it gives will awaken an interest which will bring practical results.

HYGIENE OF THE TEETH.

BY G. W. KLUMP, D.D.S., WILLIAMSPORT.

The hope that some interest might be aroused which would result in the better care and greater appreciation of the natural teeth, induced us to comply with the request of this honorable body to write upon hygiene of the teeth.

Few persons properly appreciate the intimate relationship existing between the teeth and that wonderful economy with which they stand connected. Defects in the teeth work a corresponding change throughout the whole system, just as a misplaced figure in mathematics must necessarily produce a different result.

With regard to the process of digestion the teeth have an important initial process to perform, and any defect at the beginning of any functional process must be corrected at that point, or all subsequent changes will be defective.

We regret that we have not the power and ability to present this more forcibly in a way that it would receive the attention the subject merits. For it matters little what charms we possess, whether physical or intellectual, they are all more or less neutralized by defective teeth which spoil the expression of the finest countenance and destroy the effects of the most refined manners.

It is to be regretted that so many persons are so utterly neglectful of their natural teeth and so unmindful of their true value, when so much could be done by a little personal attention in the application of simple hygienic principles.

To add to the personal appearance and comfort of an individual the proper care of the teeth is of as much importance as

the toilette of head, face and hands, and when the important office of the *teeth* is considered with reference to *mastication* and *digestion*, it is seen how *generally* they are undervalued.

The general health during the period of the formation of the teeth determines largely the physical conditions of these organs and their susceptibility to decay, so also the general health affects them after they are formed, and the health of the associate parts is especially essential to a truly hygienic condition of the teeth.

The formative material of bone, muscle and all the tissues of the body is secured from the blood. It is evident, therefore, that the blood must have pabulum containing all the necessary elements required to form the different tissues of the body or imperfection in development will ensue.

The modern preparation of food often deprives it of some of the nutritive elements essential for the perfect development of the body. Tissue cannot be formed and nourished without proper food supply which must be in a form in which it is easily digested and capable of being properly assimilated. The imperfect development and early decay of the teeth is undoubtedly, to a great extent, due to improper nutritive material.

Lime salts enter into all the tissues of the body, but form the principal part of the teeth and bony structure. It is estimated that 1 per cent. of their weight is required daily to maintain a normal or healthy state of the osseous structure alone, and during the formative period it is no assumption to suppose that a larger percentage of lime salts is required.

It is evident that sufficient mineral substance should be supplied the child *in utero* and during its growth, that there be no lack for proper development of the teeth. Lime salts are abundant in most of the cereals and some of the vegetables, but the craze for double bolted flour deprives the food of a large part of its mineral constituents.

Prof. Johnson, of England, and Prof. Mayer, of Germany, found that unbolted flour contained fifteen times more of the phosphates than that which is bolted.

Next in importance, probably, to the food supply, is the active use of the teeth in the thorough mastication of every part of the food before it is swallowed. That every part of the body must receive a

proper degree of exercise for its perfect development and maintenance in health is a well-established physiological law. There is no doubt that the active use of the teeth aids in their perfect development, and it is doubtless largely on this account that savages, semi-barbarians and others, who live upon coarse food which requires vigorous masticative effort in order to render it comfortable to swallow, have better teeth than the higher civilized. Active exercise of a part attracts the blood supply, giving it increased strength and vigor, as is well shown in the old illustration of the enormous development of the muscle of the blacksmith's arm. In the matter of exercise of the teeth, the attrition and friction are additional advantages, since thereby they are kept polished and comparatively clean.

Children should be taught the importance of the care of the teeth as well as the thorough mastication of their food. Thus they not only preserve their temporary or first teeth, but they avoid the habit of bolting their food. Thorough mastication of the food and the admixture of the saliva is the first, and one of the most important, processes of digestion, for without the first being thorough, the further digestion is hampered, and perfect assimilation of nourishment is impossible.

It has been well said that personal beauty is too intimately connected with personal grace not to require much of our attention. The human face divine plays an important part in the life of nearly every person. What can be more repulsive, and yet more common, than the features robbed of fair proportions and falling prematurely into decay, owing to the mutilations of the teeth, those beautiful organs celebrated by artists and poets, and yet neglected by so many? It would seem that for the sake of retaining as long as possible the expression of youth and beauty it would be sufficient inducement for all to take special pains to keep the teeth and gums in a healthy condition, and allow the breath to be sweet and pure. The value of good, natural teeth cannot be computed in dollars and cents, for, aside from their service in preparing food, they are used in speech and song, add comeliness to the features and give character and expression to the individual.

Among those who are careful and appreciative of their teeth, there are not a few who value them only on account of some special service they are used for when their loss might interfere with their vocation or pursuit; others care only because it might mar their personal appearance, and some of the latter class are apprehensive about their front teeth only, and do not realize, until too late, that the loss of the molars or grinders will often cause as great a deformity as the loss of the front teeth, while their loss for *service* in mastication (*the main purpose of the teeth*) is tenfold greater. The loss of the teeth is likely to impair the health, destroy the beauty and grace, and unfit one for the active duties of life.

Artificial substitutes do something toward mitigating the evil. They are better than artificial eyes and artificial limbs, but they are no comparison in *real* value to a good set of natural teeth in mastication and expression, however well they may do. They are better than a few isolated fangs without antagonists, but if the natural teeth are properly cared for and preserved, artificial teeth can never equal them in any way the test is applied. If the service of good, natural teeth were fully appreciated, mercenary motives *alone* would be a sufficient inducement for all to bestow the greatest care upon them and use every available means for their preservation.

Cleanliness, we are told, is next to godliness, and if the proverb be true, the importance of a well-ordered mouth is so manifest that its "ivory tessellated courts" should be kept sweet and pure as a temple of worship.

The mouth is a wonderful combination of bones, muscles, arteries, veins, glands and teeth; it is the organ of taste, speech, mastication and insalivation; the channel through which passes all the food and drink necessary to sustain life and much of the air we breathe. How imperative, therefore, is the necessity to keep it in a hygienic condition, not only for the sake of appearance, but for health and comfort. You cannot expect good teeth and end during filling when the secretions of the mouth are vitiated with decomposing food and the teeth covered with soil most favorable for the development of bacteria.

Dental caries is generally admitted to be a chemico-parasitical process: First a softening of the tissue by acid and then a solution of the softened mass.

Acids in the mouth are chiefly derived from amylaceous and saccharine substances which lodge and remain upon and in the teeth. These ferment and produce acids, softening the tissue by their affinity for lime salts. This softened tissue is attacked by bacteria, some of which excrete acids and thus the destruction is continued until the tooth is lost, unless restorative measures interfere.

Cleanliness of the mouth is the great preserver of the teeth. From the time the teeth of the pure and lovely little infant first make their appearance they should be kept clean and healthy. A tooth kept perfectly clean will not decay, and the nearer we approach to absolute cleanliness the less caries will ensue.

It is not unusual to see teeth poorly organized and under unfavorable systemic conditions outlast those of vastly superior original structure simply by intelligent, persistent care.

Teeth should always be brushed after eating, whether it be once or ten times a day. You wash your hands or face as often as they are soiled. Keep the teeth *clean*; brush them whenever soiled, and especially at night before retiring.

The greatest mischief results from acids caused by decomposing food between or about the teeth during sleep. During the activities of the day the movements of the tongue and lips, together with the salivary secretions to some extent dilute and wash out the acids as they are formed, but during sleep there is little to prevent the acids from acting upon the teeth if particles of food are left to decompose and thereby form them.

Teeth should be brushed upon all their surfaces, but especially longitudinally, to remove the debris from between them. Use also a quill pick and floss silk in addition to the brush. Avoid advertised nostrums which are warranted to whiten and beautify the teeth; they either will not do what they claim or will cause permanent injury.

Precipitated carbonate of lime is a cheap, safe and efficient tooth cleaner. It is slightly alkaline and will help neutralize acidity and will not injure tooth tissue.

Select an honest, conscientious and competent dentist to care for your teeth, and follow his instruction and advice.

The care of the teeth should begin in infancy, since the first teeth, to some extent, determine the character of the second or permanent ones.

Bestow this care upon your precious teeth, trifling when compared to their value, and you will keep them.

Children are forgetful. Watch them and train them until it becomes as natural as the toilette of the face and hands. It will amply repay for enhancement in personal appearance and is a mark of refinement and elegance, doubly appreciated because it appeals to the taste and attracts the eye, and will tend to greater comfort and happiness and, at the same time, is likely to prolong life.

If we could be made to realize that we are responsible to the Great Creator for every willful transgression of the laws of health, and that the neglect of any portion of the body is criminal and differs only in degree with suicide, then it might be possible to bring about a general awakening to our full duty in the direction of using all hygienic and restorative measures at our command for the purpose of prolonging the health and usefulness of every part of the entire body.—*Public Health.*

THE FRESH AIR TREATMENT IN INFECTIOUS DISEASES OF CHILDREN.

CONTAL (*These de Paris* 1897, *Der Kinderarzt*, 1898, ix, 76), stimulated by the favorable results obtained by Prof. Hutinel through the systematic employment of fresh air in infectious diseases of children, has continued investigations on the same lines and arrived at the following remarkable conclusions:

Fresh air treatment is suitable to all chronic and subacute infectious diseases of childhood, hereditary syphilis, atrophy, whooping-cough, prolonged measles, broncho-pneumonia, chronic gastro-intestinal infection, rachitis, etc. Its technic is quite simple. As soon as the warm season begins, the children are taken into the open air. During the morning they are brought into the garden, in their little beds, and allow to remain there until six o'clock in the evening. They should be placed in the shade and protected from glaring light and reflected heat. Curtains may be fastened to trees by means of wire, which will serve to partially shelter a room virtually open at the top. During bad weather we may even erect tents open on one side and covered at the top. The most impor-

tant results obtained from this procedure are as follows: The children will drink a larger quantity of milk, bodily weight increases, and fever abates. Thus, for example, the temperature, which, in a broncho-pneumonia, complicating measles, reached 39°C. on the fourth day of the disease, was reduced to 37° after one day's exposure to the open air. Another remarkable case was that of a 3-year old cachectic and anemic child, who was suspected of suffering from tuberculosis, and who in less than three months contracted, consecutively, broncho-pneumonia, whooping-cough, and measles. Notwithstanding all this, it was permanently cured through exposure to fresh air.—*Pediatrics.*

PERIODS OF INFECTION.

The period of infectiousness of contagious diseases is considered to be: Smallpox, six weeks from the commencement of the disease, if every scab has fallen off. Chickenpox, three weeks from the commencement of the disease, if every scab has fallen off. Scarlet fever, six weeks from the commencement of the disease, if the peeling has ceased and there is no sore nose. Diphtheria, from six weeks from the commencement of the disease, if sore throat and other signs of the disease have disappeared. Measles, three weeks from the commencement of the disease, if all rash and cough have ceased. Mumps, three weeks from the commencement of the disease, if all swelling has subsided. Typhus, four weeks from the commencement of the disease, if strength is re-established. Typhoid, six weeks from the commencement of the disease, if strength is re-established. Whooping-cough, six weeks from the commencement of the disease, if all cough has ceased.—*Public Health Journal.*

REVIEW OF DISEASES FOR OCTOBER. 1898.

(EIGHTY COUNTIES REPORTING.)

Eighty-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his

own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of June the following diseases have been reported from the counties named:

MEASLES.—Chatham; Henderson, 45, in one section; Perquimans, 2.

WHOOPIING-COUGH.—Currituck, 20; Pasquotank, 20; Rockingham, Union, 2; Vance, a few cases.

SCARLATINA.—Guilford, 3; Halifax, 1; Randolph, 2; Rockingham, Wilson, 2; Yadkin, 2.

DIPHTHERIA.—Alexander, 1; Ashe, 6; Clay, 2; Gaston, 2, quarantined; Iredell, in the Central and Southern parts.

TYPHOID FEVER.—Ashe, 2; Beaufort, 1; Bertie, 1; Burke, 4; Catawba, in all parts, but subsiding; Chowan, 1; Clay, 4; Cleveland, 6; Columbus, 2; Cumberland, 4; Currituck, 5; Greene, 1; Halifax, 3; Harnett, several; Haywood, 15; Henderson, 1; Hertford, 5; Iredell, abating; Jackson, 7; Jones, 1; McDowell; Macon, 8; Madison, 25; Mecklenburg; Mitchell, 15; New Hanover, 1; Northampton, 1; Onslow, 3; Pasquotank, 3; Perquimans, 2; Pitt, some; Polk, 6; Randolph, 50; Robeson; Rockingham; Rowan; Rutherford, a few; Sampson; Surry, 1; Transylvania, 1; Union, 3; Vance, a few; Watauga, 5; Wayne, 2; Wilkes; Yadkin, 1; Yancey, a little—47 counties.

MALARIAL FEVER.—Alamance; Beaufort; Bertie, in all parts; Bladen, a few cases; Cabarrus; Chowan; Columbus; Cumberland; Davie, some; Durham, in all parts; Franklin, more than for twenty years; Gaston; Gates; Halifax; Harnett; Hertford; Jones; Mecklenburg; Nash; New Hanover, in all parts; Northampton, in many parts; Onslow, many cases; Orange, in all parts; Perquimans; Person; Randolph, some; Richmond; Robeson; Sampson; Union; Warren, in many parts, mild; Washington; Wayne; Wilson, in all parts—34 counties.

MALARIAL FEVER, PERNICIOUS.—Bertie, 2; Columbus, several; Halifax, 1; Hertford, 1; Jones, 2; New Hanover, 1; Onslow 1; Wayne, 1—8 counties.

MALARIAL FEVER, HEMORRHAGIC.—Beaufort, 1; Chowan, 3; Cumberland; Halifax, 3; Hertford, 2; Jones, 2; New Hanover, 4; Onslow, 3; Perquimans, 3; Person, 1; Washington, 4; Wayne, 2—12 counties.

INFLUENZA.—Macon; Rockingham in all parts; Transylvania.

PNEUMONIA.—Buncombe; Sampson.

TONSILLITIS.—Burke; Columbus; Swain.

VARICELLA.—Currituck.

DYSENTERY.—Carteret.

MUMPS.—Jackson.

SMALLPOX.—Edgecombe, a few cases.

CHOLERA.—In hogs, Gates; Hertford; Jackson; Vance.

No diseases of note are reported from Cherokee, Davidson, Forsyth, Granville, Johnston, Lincoln, Martin, Pender and Stokes.

No reports have been received from Anson, Brunswick, Craven, Duplin and Moore.

Summary of Mortuary Reports for October. 1898 (Twenty-five Towns).

Only those towns from which certified reports are received are included:

	<i>White. Col'd. Total.</i>		
Aggregate population	92,548	69,640	162,188
Aggregate deaths ..	94	134	228
Representing temporary annual death rate per 1,000	12.2	23.1	16.9
<i>Causes of Death.</i>			
Typhoid fever ..	2	4	6
Scarlet fever ..	1	0	1
Malarial fever ..	9	12	21
Whooping-cough ..	0	2	2
Pneumonia ..	6	5	11
Consumption ..	9	16	25
Brain diseases ..	6	6	12
Heart diseases ..	5	4	9
Neurotic diseases ..	0	1	1
Diarrhoeal diseases ..	5	10	15
All other diseases ..	47	71	118
Accident ..	2	3	5
	94	134	228
Deaths under five years	25	45	70
Still-born	7	16	23

Mortuary Report for October, 1898.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-Cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS. By Towns. Deaths Under 5 Years.	Still-born.
		By Races.	Total.	By Races.	Total.																		
ASHEVILLE.....	W.	8,000		15.0								1	1						3	2		10	1
Dr. M. H. Fletcher.	C.	5,000	13,000	21.6	17.5							1	4	1					1			19	3
CHARLOTTE.....	W.	17,153		9.1								2	2	3					5			13	
Dr. F. O. Hawley, H.O.	C.	9,000	26,153	20.0	12.8							2	2	3					1			15	
DURHAM.....	W.	4,000		9.0				1														3	
Dr. J. M. Manning.	C.	2,000	6,000	6.0	8.0									1					1			1	
FAYETTEVILLE.....	W.	3,500				1		2											1			5	
Dr. J. V. McGougan.	C.	2,500	6,000			1		1											1			3	
GOLDSBORO.....	W.	4,000		3.0																		1	
D. J. Broadhurst, C.Ck	C.	3,000	7,000	36.0	17.1			1											3	5	1	9	
GREENSBORO.....	W.	5,500		4.4																		10	
J. S. Michaux, City Clk.	C.	2,500	8,000	19.2	9.0								1		1				2			4	
HENDERSON.....	W.	2,250		10.7		1													1			2	
Dr. Goode Cheatham	C.	2,000	4,250	0.0	5.6																	0	
HILLSBORO.....	W.	400		30.0															1			1	
Dr. C. D. Jones.	C.	300	700	0.0	17.1																	0	
LENOIR.....	W.	900		13.3															1			1	
Dr. A. A. Kent.	C.	300	1,200	0.0	10.0																	0	
MARION.....	W.	800																					
Dr. B. A. Cheek.	C.	400	1,200																				
MONROE.....	W.	1,800		6.7								1										1	
Dr. J. M. Blair.....	C.	600	2,400	20.0	10.0																	1	
NEWBERN.....	W.	3,500		3.4				1											1			1	
Hugh J. Lovick, C.Ck	C.	6,000	9,500	16.0	11.4			3					1	1	2							8	
OXFORD.....	W.	1,200		10.0																		1	
Dr. G. A. Coggeshall.	C.	1,100	2,300	32.7	20.9							1							1	1		3	
RALEIGH.....	W.	8,500		5.5								2		1	1				7			11	
T. P. Sale, Clerk B. H.	C.	7,500	16,000	11.2	13.5			1				1	1	1					3			7	
ROCKINGHAM.....	W.	1,300		18.5								1							1			2	
Dr. W. M. Fowikes.	C.	450	1,750	26.7	20.6							1										1	
ROCKY MOUNT.....	W.	1,600		0.0																		0	
Dr. G. L. Wimberley.	C.	1,000	2,600	12.0	4.6			1														1	
SALEM.....	W.	4,100		11.7											1				3			4	
S. C. Butler, Mayor.	C.	450	4,550	0.0	10.5																	0	
SALI BURY.....	W.	4,000		15.0									1						3	2		5	
Dr. W. L. Crump.	C.	2,000	6,000	42.0	24.0														3	3		7	
SCOTLAND NECK.....	W.	775		46.4								1										3	
J. A. Perry, Mayor.	C.	425	1,200	28.2	40.0								1									1	
TARBORO.....	W.	1,200																					
Dr. L. L. Staton.	C.	1,300	2,500																				
WARRENTON.....	W.	970		1.735																			
Dr. P. J. Macon.	C.	765																					
WASHINGTON.....	W.	3,000		12.0								2							1			3	
Dr. Joshua Tayloe.	C.	2,500	5,500	52.8	30.5	1		2		2		2	2		1				1			11	
WELDON.....	W.	700		0.0																		0	
J. T. Gooch, Mayor.	C.	750	1,450	32.0	16.5																	2	
WILMINGTON.....	W.	11,000		21.8				3				1		1					15			20	
Dr. W. D. McMillan.	C.	15,500	26,500	37.2	30.8			3				1	3	1					1	39		48	
WILSON.....	W.	2,400		25.0				2											1	1		5	
Dr. A. Anderson.	C.	2,300	4,700	15.6	20.4			1		2												3	

N. B.—The reporters for the cities and towns printed in **BLACK TYPE** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

*In addition, there were three deaths among visitors: Consumption, 1; Pernicious anæmia, 1; opium poisoning, 1—all white.

County Superintendents of Health.

Alamance	Dr. W. R. Goley.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Anson	Dr. E. S. Ashe.	Lincoln	Dr. L. A. Crowell.
Ashe	Dr. L. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. Joshua Tayloe.	Macon	Dr. F. L. Siler.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. Gilbert McLeod.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. D. M. Moser.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan	Dr. R. H. Winborne.	Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moyer.
Craven	Dr. L. Duffy.	Polk	Dr. H. D. Shankle.
Cumberland	Dr. J. Vance McGougan.	Randolph	Dr. T. T. Ferree.
Currituck	Dr. H. M. Shaw.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire	Rowan	Dr. W. L. Crump.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCanless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. W. J. Judd.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. T. B. Williams.
Harnett	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Councill.
Henderson	Dr. J. G. Waldrop	Wayne	Dr. Jas. H. Powell.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. M. Turner.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. J. H. Wolff.	Yancey	Dr. J. L. Ray.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, at Raleigh, N. C.

GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	C. J. O'HAGAN, M. D.,.....Greenville.
S. WESTRAY BATTLE, M. D.,.....Asheville.	J. D. SPICER, M. D.,.....Goldsboro.
W. H. HARRELL, M. D.,.....Williamston.	J. L. NICHOLSON, M. D.,.....Richlands.
JOHN WHITEHEAD, M. D., .. Salisbury.	A. W. SHAFFER, SAN. ENG.,.....Raleigh.
RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

VOL. XIII.

DECEMBER, 1898.

No. 9.

THE HEALTH CONFERENCE.

As heretofore announced the annual Health Conference with the People came off at Winston-Salem on the 7th inst. We were cordially received by the city officials, health officers and the local physicians, an unusual number of whom were in attendance, much to our gratification. The people, however, did not turn out as we had hoped and expected in such an enterprising city, but those that came were interested and appreciative. The ladies, who, it seems, are chiefly to be relied on to support every good cause, were relatively out in force in spite of the cold, which we suppose kept many away.

Several members of the Board were unavoidably absent, but with the help of Dr. Kinyoun, of the Marine Hospital Service; Dr. Curtice, of the State Experiment Station; Mr. Ludlow, C. E., of Winston, and Dr. Campbell, the partner and representative of Dr. Long, of Statesville, detained by a critical case, we had more than enough material with the discussions to occupy the three sessions.

The meetings were held in the Y. M. C. A. Hall, and we wish to return our

thanks to the Association for its use, and to the courteous secretary, Mr. Hicks, for his assistance in various ways. We also desire to gratefully acknowledge our indebtedness to the two daily papers, *The Twin City Daily* and *The Journal* for their kindness in cordially endorsing and advertising the Conference. And, too, we must express our appreciation of the social courtesies extended to us in his charming home by Dr. Bahnson, who was for many years the highly esteemed President of the Board.

The following announcement and programme was mailed to a number of leading citizens, printed in the papers and distributed by hand:

HEALTH CONFERENCE OF THE STATE
BOARD OF HEALTH WITH THE PEOPLE
AT WINSTON-SALEM, DEC. 7, 1898.

For several years it has been the custom of the State Board of Health to hold annually in one of our larger cities or towns a meeting for the purpose of bringing directly to the attention of the people the subject of sanitation, or preventive medicine. The name given to these meetings, "Health Conference with the People," accurately describes their character. The State Board of Health meets with the

people of the community for the mutual discussion of all questions included in the word Sanitation. It is particularly desired that the people should actively participate in the conduct of the meeting, asking questions about, and giving their own experience on any matters relating to health.

There are in every community some public spirited individuals who are interested in general measures likely to improve the health and, in consequence, advance the prosperity of their town, such as water-supply, sewerage, the disposal of garbage, or other more dangerous refuse, the control of contagious diseases, etc., but in our active, progressive "Twin-City" there are, as is well known, many such valuable citizens. We confidently count upon the cordial co-operation of this class in making the meeting a success.

As the mistress of the household, owing to the absence at his business of the master, must practically be the health officer of the family, and as it is a beautiful fact in our American civilization that what the women really want they always get, it is the earnest wish of the Board that the ladies attend, both for their own good and for the influence we hope to have them exert on their husbands and sweethearts, who are too often indifferent to these things.

But no one has influence in matters of this kind comparable to the family physician. He is the trusted adviser on all subjects in any way related to health, and his words have more effect than those of all others combined. We especially desire, therefore, the hearty co-operation and assistance of our medical friends.

This invitation is not limited to Winston-Salem, or Forsyth county, but any one interested from other sections of the State will be warmly welcomed.

The reader of this is requested to lend us the support of his or her presence and sympathy, and to induce others to do the same.

The meetings will be held in the Y. M. C. A. Auditorium. There will be three sessions, at 10 a. m., and at 3 and 7:30 p. m.

Come and bring your friends.

RICHARD H. LEWIS, M. D.,
Secretary.

PROGRAMME.

THE BEST METHODS OF DEALING WITH
TUBERCULOUS PATIENTS FROM A SANI-

TARY STANDPOINT, by George G. Thomas, M. D., of Wilmington, President of the Board.

*BOVINE TUBERCULOSIS, by Cooper Curtice, D. V. S., M. D., of Raleigh, Biologist and Veterinarian to the A. & M. College and the State Experiment Station.

SANITATION IN SMALL TOWNS, by W. H. Harrell, M. D., of Williamston, member of the Board.

†MANAGEMENT OF AN OUTBREAK OF SMALLPOX IN A NORTH CAROLINA COMMUNITY, by H. F. Long, M. D., of Statesville, Superintendent of Health of Iredell county.

*SMALL-POX AND VACCINATION FOR PLAIN PEOPLE, by one of them—Col. A. W. Shaffer, C. E., of Raleigh, member of the Board.

WATER-BORNE DISEASES, by John Whitehead, M. D., of Salisbury, member of the Board.

*BATHS: A PLEA FOR THEIR MORE GENERAL USE IN THE HOUSEHOLD, by S. Westray Battle, M. D., of Asheville, member of the Board.

*DRINKING WATER AND ITS RELATION TO HEALTH, by J. L. Ludlow, C. E., of Winston, ex-member of the Board.

*DIPHTHERIA: ITS PREVENTION AND TREATMENT, by Passed Assistant Surgeon J. J. Kinyoun, U. S. Marine Hospital Service.

†REPORT ON THE USE OF DIPHTHERIA ANTITOXINE, by H. F. Long, M. D., of Statesville.

*GERMS, by Richard H. Lewis, M. D., of Raleigh, Secretary of the Board.

N. B.—Persons in the audience desiring to do so are earnestly requested to ask questions or propound new subjects for discussion *at any time* and not to be afraid of interfering with the regular programme. A real conference is what the Board wishes.

*Papers and addresses delivered.
†Verbal synopsis given.

DEATH OF DR. WINBORNE.

It is with much regret that we chronicle the passing away of Dr. R. H. Winborne, Superintendent of Health of Chowan county, at the age of 73 years. After a long and useful life he rests from his labors and his deeds do follow him.

Smallpox in Iredell County---A History of the Epidemic—Where it Came From—Methods Employed to Prevent its Spread—The Management of Patients and Suspects.

BY HENRY F. LONG, M. D., SUPERINTENDENT HEALTH OF IREDELL COUNTY.

[At our request Dr. Long prepared the appended paper for the Health Conference at Winston Salem. The request was made because Dr. Long, as Superintendent of Health of his county, had managed the large-t outbreak we have had in the State in recent years so well that we believed his account of his methods would be of value generally, but especially to other health officers, who may at any time be confronted with the same problem, often a very difficult one where ignorance and prejudice and parsimony exist together. The reader will easily understand that our expectations have been more than realized. We commend the paper heartily, and hope every one of our medical readers in this State where the conditions are the same will read it. They may have use for its suggestions very soon, as smallpox is still in the country. The Doctor refers to the terrible stench in the suppurating stage. Perhaps the slow burning of one pastile at a time in Schering's small formaldehyde lamp might help that. It is said to overcome odors and t the same time to be imperceptible to the patient.]

To begin at the beginning, and I think it was the beginning, the first smallpox experience we of Iredell had was when the negro Perkins made his way from Neal's Camp, on the M. & M. Railroad, to Charlotte. This camp was in Rowan county near the Iredell line. Perkins left the camp the day following that on which he had the initial chill, and of a certainty his progress was slow. By the time he reached Mooresville the eruption had appeared. One night was spent in the town and the journey resumed the next day. When within three miles of Charlotte his strength gave out, and Perkins fell by the wayside. Passers-by found him, reported the matter to the Mecklenburg officials, who immediately

moved him to the hospital, where the patient died soon afterward.

As soon as I was notified of the occurrence I went to Mooresville, and, aided and assisted by the local physicians, went all along the line of the road and vaccinated all exposures that could be located. This was in February, I think, and nothing further was heard of smallpox until the last of April, when one A. B. Smoot, a colored minister, came to Statesville and was found to have coherent smallpox. I was out of town when Smoot sent for medical aid. Dr. Campbell went in my stead and diagnosed the case to be small-pox. Smoot said that he was just from Mooresville; the family there with whom he stayed had been sick with what had been called chickenpox. However, Dr. Campbell decided that Smoot had smallpox. Next morning I saw the case and thoroughly agreed with Dr. Campbell that the case was smallpox. The house was at once put under quarantine. All exposures were detained and vaccinated. We hoped that the disease would be confined to this patient and the house where he was, but within two weeks Julia Dean, a colored woman living near where Smoot was confined, developed the disease in the confluent form.

At this time I went to see the cases in Mooresville that were said to be chickenpox. No physician had attended them, but from all accounts of character, duration, and termination of these cases, I judge that they had the discrete form of smallpox. The premises and clothing were thoroughly disinfected. The patients thought they had contracted the disease from Nathan Sloan, who lives near Troutman, N. C., a station on the A. T. & O. R. R., between Statesville and Mooresville. Sloan and his entire family had had chickenpox early in the spring; he thought he contracted the disease from a man he met on the railroad. Sloan is a section hand and the

man he met, from all accounts, could have been none other than Perkins.

Within the week a case of confluent smallpox was, by accident, discovered at Belmont, a negro settlement two miles east of Statesville. An investigation disclosed the fact that there were five cases in the settlement. All these were put under quarantine. All the inhabitants of the settlement were vaccinated immediately, though the Sheriff of the county had to be called in to assist in this. It was learned that one Tom Rickert, colored, had stayed all night at Nathan Sloan's on his way home from work on the railroad, and a short time after reaching Belmont had been sick with an eruption. He passed through the different stages of the disease, recovered and had gone back to work before it was known that he had been sick. The first case discovered was his grandmother, who was in the fifth day of the eruption when first seen. A few days later six cases, all in the same family, were reported from Elmwood, in the eastern part of the county. The neighborhood was thoroughly and systematically vaccinated, this work being in charge of Dr. Burt Wood.

There was considerable excitement and anxiety in Statesville, yet very few of our citizens were willing to admit that there was a single case of smallpox in the community. This seems contradictory, but it was the situation we had to face. The possibility of an outbreak of small-pox was greatly feared, but it seemed impossible for the public to realize that it had come. There was considerable opposition to vaccination, and, as a rule, the most of it came from the whites. During the scare in February free vaccination had been offered the citizens and urged upon them. A great number of them took advantage of the opportunity, but the outbreak found many people who had never availed

themselves of the only protection we have against this dread disease. For the moral effect it would have, I asked the town and county authorities to have the government smallpox expert, Dr. C. P. Wertenbaker, of the marine hospital at Wilmington, visit us and examine the patients and make a diagnosis of the disease. We hoped that this would have a beneficial effect upon the doubting Thomases and arouse the public to a full sense of the situation and its duty in the premises.

To the efforts of our efficient Secretary of the State Board of Health more than anything else do we owe the prompt arrival of Dr. Wertenbaker. This expert made a careful and thorough examination of all the cases in Statesville, Belmont and Mooresville. The diagnosis that we had made was confirmed in every single instance. At the time of Dr. Wertenbaker's visit there were six patients in Statesville, five at Belmont and three at or near Mooresville. Certainly there was no lack of material and all the varieties of the disease that appeared during the epidemic could be seen among this number—the discrete, coherent and confluent forms of true smallpox or variola as well as several examples of varioloid.

This visit of Dr. Wertenbaker to our town and the report he made to the local authorities and to the government was of inestimable benefit, not only to the health officials, but also to the community at large. To those of us charged with the duty of guarding the public health and protecting the community from the ravages of infectious and contagious diseases, it was the *sine qua non* of a successful campaign. It was especially of value to us, in that it caused to be placed in our hands absolutely the power to vaccinate with or without the consent of the individual; and aroused the interest of the county authorities to the extent that they agreed to build a

suitable hospital and detention house. Previous to the coming of Dr. Wertenbaker the patients were quarantined wherever found. This but multiplied the centres of infection and could not but conduce to the spread of the disease. In fighting smallpox nothing, or at least very little, can be done to stop the spread of the disease unless the health officer is given full authority to vaccinate as he sees fit, and is given a proper place to isolate patients and suspects.

It is due the people of Statesville and vicinity to say that the spirit of opposition exhibited by them toward vaccination, and the non-belief in the character of the disease, the uncertainty of the fact that it was really smallpox, was not so much their fault as it may seem to have been. The unbelief was first expressed by certain of our physicians, and the laity are not so much to blame for the ideas they had. Some of these same physicians, who have not to this day seen a single case of smallpox, at the time of the outbreak declined to believe that the disease was smallpox; they hooted at and belittled those of us who did believe. A laugh and a sneer are at times the strongest of arguments one can advance. When the audience wants to believe, even when the better judgment condemns, it is quite a task to overcome such arguments. This condition, much to our sorrow, is one which, I dare say, has confronted every health officer who has had the pleasure (?) of combating the invasion of his community by some one of the infectious and contagious diseases.

Dr. Wertenbaker and I conferred with the authorities in regard to how best the disease could be arrested in its incipiency and stamped out. He recommended the erection of a hospital and detention camp, the compulsory vaccination of every person in the infected communities, and urged that the vaccination of all citizens should be insisted upon. Unless this

was done at once, said the expert, there was little use doing anything. The city authorities had been in favor of this procedure, which I had recommended, but the county authorities had been slow to act. Both Boards met, appointed a joint committee and proceeded to act upon these recommendations.

A suitable site for the hospital and detention camp was located about two miles from town in the midst of a large body of woodland. A space 300 feet square was cleared around the site of each building, and the houses were ready for occupation on the second day after the space was cleared. Each house was 25 feet wide and 50 feet long, and divided into two rooms each. The detention house was about one-fourth of a mile distant from the hospital. Each house had a separate water supply which was furnished from springs, and the water was the best I have ever had the pleasure of drinking. A large branch, supplied by numerous springs, furnished an abundance of good, clean water for bathing and washing purposes. The road leading to the establishment approached the detention camp first, and then led on down the stream to the hospital. About 100 yards from the detention house, and between it and the hospital, was a tent which was used as a dressing-room. Here the outer clothing was removed and the hospital costume of cloth shoes, heavy duck suit and head cloth were assumed when a visit to the hospital was made, or incoming patients and suspects were to be examined. Suitable guard tents and a commissary building, as well as a room for the physician in charge, Dr. R. A. Campbell, were also erected. The cook-house was placed about halfway between the two buildings, the cooks being furnished from the ranks of the suspects. A horse and covered wagon were also furnished. The hospital was in daily communication with the

town and supplies were delivered at the commissary, which was built out of the zone of infection.

The patients were brought to the hospital in a covered wagon. Smoot, the negro preacher who brought the disease to our town, had by this time sufficiently recovered to be able to do this work. The patients were met by the physician in charge and examined carefully before being admitted to the hospital—a precaution, which should always be followed, especially in time of an epidemic, for if the discovery of a new case occurs in private practice during a smallpox scare, the attending physician sometimes makes a very hasty and superficial examination. But for this rule a patient suffering from a severe and long standing case of acne would have been placed in the hospital. I am certain the physician who saw the case made no examination, save from a distance, or he certainly would have discovered the fact that the man was not a victim of smallpox. After being examined the patients were taken to the hospital and placed under the care of the nurses, who rendered them whatever attention was necessary.

The suspects were also carefully examined on arrival and disinfected in person and clothing. They were required to bathe and were given a complete change of clothing, their own clothing being subjected to a thorough boiling and disinfection before being brought to the house and again worn. The bath was first with soap and water, with the thorough use of a surgical brush, then with a strong bichloride solution. Then the patient was vaccinated, previous vaccination not being regarded. The site of vaccination was examined every three days and if there was no sign of a vesicle by the ninth day, re-vaccination was practiced. The suspects were examined morning and evening of each day. The date of their possible contact with the

disease was ascertained and a record kept and those upon whom the virus had no effect were objects of special care and watchfulness. The grounds were amply large for proper exercise, and the inmates of the detention camp were allowed to walk at will inside the guard lines. The guards were posted at the four corners of the clearing, and it was, of course, their duty to prevent the patients crossing the line and taking French leave. We had no trouble at all in this respect, the suspects proving very obedient, and not one of them made even the slightest attempt to escape. They were allowed to amuse themselves as best they could, and seemed to succeed admirably. Usually they seemed to feel the restraint for two or three days, but after that would appear to grow accustomed to their surroundings and would patiently wait for the day of release.

The suspects were kept at the detention camp fourteen full days, not counting the day of entrance and departure. When the period of time had expired—corresponding to the maximum time of the incubation of smallpox—the patients were prepared for dismissal. The hair was cut short and each one was given a cake of soap, a brush and plenty of water. After a thorough application of these sanitary articles, they were bathed in a strong bichloride solution and given a change of clothing which had been previously disinfected. A certificate was given them and they went on their way rejoicing.

The hospital was visited, as occasion demanded; never less than twice a day, usually many times. This of course depended upon the condition of the patients. A house full of smallpox patients is not the most pleasant habitation one could wish, and during the pustular stage it is especially a repulsive place. At one time when eight patients in one room and two in another were in the pustular

stage, it was almost impossible to stay long enough to make the necessary examinations, etc. The stench was simply horrible. This in spite of the fact that the rooms were well ventilated and kept as clean as possible.

It might be well to describe the precautions taken when visiting the hospital. The outer clothing was removed in one compartment of the dressing tent, then we passed into the second compartment and put on a thick duck suit, and cloth shoes; a piece of cloth was tied carefully over the head, and another, folded over a pad of absorbent cotton, was placed over the mouth and nose, thus completely covering the head and face and only leaving opening enough about the eyes to enable one to see. Gloves were worn to protect the hands and wrists. Returning after the hospital had been visited, the suit was removed in the dressing tent, hands, neck, and face were then washed in a strong bichloride solution, and the duck suit, shoes, and head cloth placed in a bichloride bath before the street dress was resumed.

Forty-two patients were received and treated in the hospital, six were treated at Elmwood, and fourteen white patients, the only white patients we had during the epidemic, were treated at their homes at Doolie, a small settlement in the southern part of the county. The venerable Dr. D. Burt Wood, an eminent and proficient physician of the old school, and a valued friend of mine, consented to take charge of the cases at Elmwood. Although he had retired from active practice on account of age, he consented to render his community and the county this one last arduous service. The cases in Doolie were in charge of Dr. Will White, who faithfully followed my directions in regard to the treatment of the patients and the disinfection of the infected houses. The cases at Doolie can be traced to Tom Rickert, who spent a

night at the place with a colored family just after recovering from his attack. This colored family contracted the disease. The mother cooked in a white family and brought the disease to them in her clothes.

As before stated, the disease was seen in two forms, *variola vera* and *varioid*.

I can say, with the experience gained from the observation and study of the sixty-two cases, that there is no distinguishing symptom or symptoms of the onset of this disease other than that of the eruption. The same symptoms are seen in the onset of malaria and typhoid fevers and la grippe, and the similarity is seen in the premonitory symptoms of dengue. The disease begins with a chill, followed by high fever, intense headache, and pains in lumbar region, loins, and limbs. Nausea and vomiting are usually but not always present. There may be a chill on three succeeding days, or several chills in one day. The temperature rises rapidly and may be as high as 104 degrees on first day. It is usually continuous with slight morning remissions, or it may run a regular course as in typhoid fever, the temperature curve following a regular diurnal variation. The pulse is strong, full, and bounding, ranging from 100 to 140. The face is red, eyes injected and the skin is usually dry. The patient is restless and distressed and when sleep is possible has frightful dreams. Appetite absent; thirst incessant; constipation usually present. Severe initial symptoms do not always precede a severe attack of the disease. The tongue is usually moist and heavily coated, the color ranging from brownish-white to brownish-yellow, with the red papillae showing very much as in scarlet fever. It is usually thick, heavy, and swollen, often showing the impression of the teeth. The severity of the symptoms, the headache, pain in back and limbs, and the gastro-intestinal disturbance

may be so modified by vaccination during the incubation period that the patient will suffer little or no inconvenience and the rash itself may be the only noticeable symptom. There are no distinctive symptoms of variola before the eruption makes its appearance. The eruption is distinctive and the different forms in which it appears go to make up the three varieties of smallpox, which are:

1. Variola Vera.
2. Variola Hæmorrhagica.
3. Varioloid.

Variola Vera is divided into four subdivisions, according to the peculiar forms in which the eruption appears, as follows:

- a. Discrete, in which each pustule is separate and distinct.
- b. Corymbic, or where the pustules are in clusters or patches.
- c. Coherent, in which the individual pustules come in contact.
- d. Confluent, in which the pustules unite or flow together without a line of division between them.

In an ordinary case the eruption is completed and no new pustules make their appearance after twenty-four to thirty-six hours.

In the discrete form, generally on the fourth day of the invasion, small red spots make their appearance on the forehead, most often close to the hair line, on the wrist and ankle. The macules have the appearance of small red points, are slightly elevated, somewhat hard and rolling under the finger like a shot imbedded in the skin, and are effaced by pressure. Within first twenty-four hours they appear on other parts of face, on the limbs, and a few on the upper part of the trunk. When the rash appears the temperature falls and the general symptoms abate. On the second day of the eruption, which is the fifth day of invasion, the red point is found enlarged and elevated and now becomes a papule. It

cannot be effaced by pressure, is hard and sound and preserves its characteristic form under any and all tests made by the finger. The third day of the eruption finds the papules changed into vesicles. Each vesicle is elevated, circular, the summit flat, clear, and filled with a transparent, serous fluid. In the centre of the vesicle is a very small depression, the so-called umbilication. From its appearance the umbilication looks like it was the result of the puncturing of the vesicle with a small needle. For twenty-four to thirty-six hours the vesicles increase in size. On the fifth day of the eruption (the eighth day of the disease) the vesicles change into pustules, the umbilication disappears, the flat top assumes a globular form, and a milky or grayish-yellow color, owing to the pus contained in them. An areola of injection surrounds the pustules and the skin between them is swollen. Each pustule enlarges and becomes hemispherical; the base becomes broader and dark, and the skin around it much swollen and tumefied. The maturation follows the order of the appearance of the eruption. The swelling around the pustules causes considerable tension about the face, the eyes are often swollen shut, and there is, in consequence, much discomfort and pain. Coincident with the maturation there is a rise of the temperature, the secondary fever, and the return of the general symptoms. In the discrete form the temperature usually disappears after twenty-four to thirty-six hours, and by the tenth or eleventh day the temperature is normal and the stage of convalescence has begun. The pustules discharge their contents, collapse and dry rapidly. The scabs form, first on the face and then on other parts of the body, in order of appearance. This continues until the fourteenth day of the eruption and constitutes the period of maturation. The scabs begin to fall off and continue fall-

ing until about the eighteenth or twenty-second day.

Desquamation is usually completed by the twenty-eighth or thirty-first day. The scabs leave small red or livid spots, which gradually become indentations or pits. In the negro these spots are often jet black and remain one or two shades darker than the surrounding skin, even after the completion of cicatrization.

In the *confluent form* the initial symptoms are the same, but more severe, and the rash appears on the second or third day. The earlier the appearance of the eruption, the more severe the attack. The papules may be isolated at first and only become confluent at a late stage of the disease. In severe cases the skin is swollen and hyperaemic, and the papules are very numerous and close together. On appearance of the rash the fever and general symptoms subside, but not to the same extent as in the discrete form. On the eighth day the temperature rises and the vesicles change to pustules. The hyperaemia is intense, the swelling of the hands and feet increases. The maturation of the pustules is complete by the tenth day, coalescence is established, and in place of numerous small individual abscesses, there is exhibited one large abscess which covers the entire skin of the head and the extremities. The temperature is high, 103 to 104 degrees, pulse from 120 to 135. Thirst is incessant, and there may be delirium. Salivation is sometimes a complication of this stage.

The appearance of the patient is horrible in the extreme, it is almost impossible to paint a pen picture which will convey to your minds an adequate idea of the terrible faces shown at this stage. The face is swollen out of all human semblance; the great swelling of the cervical lymphatic glands brings the throat out to and sometimes beyond the line of the lower jaw, the eyes are closed, and occasionally the swelling in this region is

so great that only a crease in the skin, with a few eyelashes protruding, show where the eye is located; the external nasal apertures are all that is left of the individuality of the nose; the entire surface of the skin, supporting an immense abscess, is grayish-white in color. The odor is, in most instances, insupportable and tenacious, inconveniencing the patient as well as the attendants. In fatal cases, by the tenth day, the pulse becomes weaker and more rapid, the delirium increases, there is sub-ultus, occasionally diarrhoea, and death intervenes. Haemorrhagic symptoms may develop between eighth and tenth day, and if the patient passes safely through this stage, about the twelfth day the pustules break and the pus exudes and crusts form. Desiccation occupies the time from the fourteenth to the eighteenth day. The temperature falls and by the twenty-second day has again become normal. Convalescence is usually slow and may be prolonged to the second or third week.

Varioloid, or variola modified by vaccination, runs a regular course, as does variola; the difference is one of degree. Most often the patient is not even ill enough to feel the need of lying down. A few days of indisposition, during the invasion, a headache more or less intense, and perhaps pain in back and limbs, but none of the symptoms are severe enough to inconvenience the patient for more than two or three days. The disease runs its course in eight days and desquamation has occurred usually by the twelfth day.

As regards treatment, there is little to say. Vaccination is the only agent, medicinal or otherwise, that has ever had any appreciable effect upon the course of the disease. The test of a remedy is, of course, the effect it will have upon the disease; whether it will abate or shorten the attack. One patient at the hospital,

a child, was vaccinated three times in succession, none of which were successful, and twenty two days after being exposed to variola had the initial chill, followed by the usual prodromic symptoms. All the vaccinations were made after the exposure. The attack was shortened appreciably, the patient being discharged on the fourteenth day. Two other patients, upon whom the virus had been used unsuccessfully only two or three days before the initial symptoms appeared, did not seem to have been at all benefited, and in them the disease ran its usual course.

The treatment of the cases at the hospital was in the hands of Dr. Campbell. In the main it was symptomatic. For restlessness, delirium, and insomnia, cold sponging and Dover's powder was the usual practice. The constipation was generally combated by giving small doses of Epsom Salts and potassium bitartrate. A fever and diuretic mixture of Potassium Citrate, Tincture of Aconite root and spirit of nitrous ether was given freely. The mild chloride of mercury was used as it seemed indicated. Quinine was used during the entire course of the disease in small tonic doses. Large doses of potassium bitartrate and bicarbonate of soda were used to combat any dropsical tendency. Several of the patients developed such tendencies, as a general rule the extremities being the parts so affected. Stimulants, carbonate of ammonia and alcohol, were used as indicated.

An attempt was made to combat the effects of the disease at least and, we think, this was not without success. Taking the position that the disease in the eruption and pustular stage is localized, the effort was made to counteract the effect of the poison in the pustule. For this purpose a solution of carbolic acid in vaseline was used. This was applied to the whole surface of the body twice

each day, from the time the eruption appeared until the patient was discharged. This was not begun until several of the patients had reached the desquamative stage of the disease. It was used on at least thirty of the patients, and always with good results. Those of the patients upon whom it was not used are, some of them, terribly marked, while patients that suffered equally as severe attacks of the disease, and upon whom it was used, show scarcely any scars. No especial claim is made for the treatment; we do not even claim that this will prevent the pitting of small-pox. We only make the statement that those patients upon whom this solution was used certainly are less severely pitted than those upon whom it was not used. It seemed to soothe and allay the persistent burning and itching of the skin as nothing else would.

Complications were met as they appeared. Severe pyralism was met with in one patient. Laryngitis gave some trouble, but was never in the acute form. There were no bronchial, pulmonary, or cardiac complications. Mental complications were seen in only one patient, and this persisted for some time after recovery. The most troublesome and disagreeable complication was that affecting the skin. Numbers of the patients had large crops of boils, that were of large size and very painful, one patient having as many as twenty large boils at one time. Catarrhal conjunctivitis was seen in three patients only and readily answered to treatment.

The fact that there was no mortality record in so many cases was an argument in the hands of many people that the disease was not smallpox. The season of the year doubtless accounts for this in a measure. The usual manner of death in this disease is by lung complications. The outbreak being in summer, the patients were not subjected to sudden changes in temperature while the surface

of the skin was not in condition to protect the body. Acquired immunity, through the vaccination of parents and grandparents, perhaps had not a little to do with the lack of mortality in these cases. Certain it is that a complication arising from the involvement of any of the vital organs would surely have resulted in the death of at least ten of these cases. As it was, the lungs, heart and especially the kidneys, performed their functions as in health. These points were carefully watched and all precautions taken to keep them in normal condition.

The ivory points of the Dr. H. M. Alexander Co., of Marietta, Pa., and the fluid (glycerinated) vaccine of the Dr. H. Weicker Company, of Milwaukee, Wis., were used, and I must say that, in my opinion, there is no comparison. The fluid vaccine is unquestionably the best in every way. There were some very sore arms from the ivory points, but no bad results are known to have followed vaccination when a fluid (glycerinated) vaccine was used. The county used that which was made by the firm I have named, but fluid vaccine made by other firms was used in the community and always with good results. Hence my statement. I think that none other than a fluid vaccine, purified by glycerine, should ever be used. The arm-to-arm vaccination gave no better results than the fluid vaccine, though it was superior in every way to the point vaccination. Seven thousand and seven hundred vaccinations were made in the county and town.

In conclusion I would like to say to the State Board of Health, if I can do so without the appearance of offering them unsolicited and unnecessary advice, that new and more strict legislation is necessary, particularly in regard to the infectious and contagious diseases. The County Superintendent should be given the power to establish a hospital for in-

fectious diseases whenever he thinks it necessary, instead of waiting for county and city authorities to act, as the law is at present. More than this, a compulsory vaccination law should be passed, requiring the vaccination of all citizens every three years, without regard to previous vaccination. A vaccination scar should be the entrance card for every child that attends a public school, which it should be required to show before it enters the doors of the school house. Under proper laws and regulations it would not be many years until an outbreak of smallpox would be an impossibility. It is within the power of human beings to banish forever from the earth one of our most dreadful diseases. And thanks to the immortal Jenner this is possible. Yet we do not properly appreciate this great blessing. We certainly do not take advantage of it as we should. We owe it to ourselves and our posterity that we should do all in our power to at least free our State from the blight of this plague, and this we can do with only a little effort in the right direction. Speed the day when we shall, each and every one of us, be immune and surely and safely protected from the ravages of this terrible scourge.

REVIEW OF DISEASES FOR NOVEMBER. 1898.

(SEVENTY-SEVEN COUNTIES REPORTING.)

Eighty-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of June the following diseases have been reported from the counties named:

MEASLES.—Green, 1; Henderson, 23; Pitt.

WHOOPIING COUGH.—Beaufort, 5; Granville; Halifax, 15; Pasquotank, 20; Perquimans, 3; Robeson; Rockingham; Surry, 3—8 counties.

SCARLATINA.—Granville, 4; Guilford, 2; Mecklenburg, 1; New Hanover, 4; Rockingham; Wake, 2.

DIPHTHERIA.—Cleveland, 1; Gaston, 2; Iredell, 2; Jones, 1; Mecklenburg 1; Perquimans, 1; Rockingham; Wake, 1; Yadkin, 1—9 counties.

TYPHOID FEVER.—Buncombe, 2; Burke, 1; Cherokee, 1; Clay, 3; Cleveland, 4; Cumberland, 3; Davidson, 2; Greene, Guilford, a few; Halifax, 4; Harnett, a good many; Haywood, 5; Henderson, 1; Iredell; Jackson, 4; Macon, 1; Madison, 6; Mecklenburg; Mitchell, 20; Moore, 1; New Hanover, 3; Northampton, 3; Onslow, 1; Person; Pitt; Polk, 1; Randolph; Richmond, 1; Robeson; Rockingham; Rowan; Union, 3; Watauga, 4; Yadkin, 1; Yancey, 1—35 counties.

MALARIAL FEVER.—Bertie, in all parts; Columbus, several cases; Currituck, in some parts; Durham, in nearly all parts; Gaston, a few; Gates, several; Halifax, in some parts; Johnston, in all parts; Mecklenburg; Nash, a few; New Hanover; Northampton, in all parts; Onslow; Perquimans; Person; Pitt; Randolph; Robeson; Sampson; Washington; Wilson, in all parts—21 counties.

MALARIAL FEVER, HEMORRHAGIC.—New Hanover, 2; Northampton, 8; Onslow, 2; Perquimans, 2; Pitt, 3; Washington, 2.

INFLUENZA.—Cumberland; Jackson; Macon; Perquimans; Robeson; Vance.

PNEUMONIA.—Alamance; Cabarrus; Cleveland; Gaston; Iredell; Jackson; Onslow; Person; Stokes; Union—10 counties.

TONSILLITIS.—Cherokee; Columbus; Currituck; Gates.

MUMPS.—Jackson.

VARICELLA.—Clay.

SMALLPOX.—Edgecombe, 20 cases, 13 white and 7 colored. The contagion was brought from Norfolk. The disease has been confined to families in the eastern part of the county. Dr. Staton, Superintendent of Health, has vaccinated 1,200 persons.

CHOLERA IN HOGS.—Martin; Onslow; Robeson; Vance.

HYDROPHOBIA.—Catawba.

No diseases of note were reported from Alexander, Bladen, Caldwell, Carteret, Catawba, Chatham, Davie, Forsyth, Franklin, Lincoln, McDowell, Martin, Orange, Rutherford, Transylvania, Warren, Wayne and Wilkes.

No reports have been received from Anson, Ashe, Brunswick, Chowan, Craven, Duplin, Hertford and Swain.

Summary of Mortuary Reports for November, 1898 (Twenty-four Towns).

Only those towns from which certified reports are received are included:

	<i>White. Col'd. Total.</i>		
Aggregate population	93,648	70,640	164,288
Aggregate deaths ..	92	115	207
Representing temporary annual death rate per 1,000	11.9	19.5	13.8
<i>Causes of Death.</i>			
Typhoid fever ..	3	5	8
Scarlet fever	1	0	1
Malarial fever ..	3	5	8
Pneumonia	4	10	14
Consumption	11	19	30
Brain diseases ..	5	2	7
Heart diseases ..	6	5	11
Neurotic diseases ..	0	2	2
Diarrhœal diseases ..	10	3	13
All other diseases ..	47	53	100
Accident	2	4	6
Violence	0	7	7
	92	115	207
Deaths under five years	22	26	48
Still-born	9	24	33

Mortuary Report for November, 1898.

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEMPO- RARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-Cough.	Measles.	Pneumonia Con- sumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS. By Towns.	Deaths Under 5 Years.	Still-born.
		By Races.	Total.																		By Races.		
ASHEVILLE	W.	8,000	13,000	16.5	20.3							1	1	2	1	5	1	1	1	11	11	1	1
Dr. M. H. Fletcher.	C.	5,000	26.4									1	1			4	1			11	12	3	1
CHARLOTTE	W.	17,153	26,153	9.1	12.5							1	2		1	9	1			13	15	3	1
Dr. F. O. Hawley, II.O.	C.	9,000	20.0									2				1	2			13	15	2	4
DURHAM	W.	4,000	12.0										1								4		
Dr. J. M. Manning.	C.	2,000	6,000	0.0	8.0																4		
FAYETTEVILLE	W.	3,500	6,800	14.0									1	1							2		
Dr. J. V. McGougan.	C.	2,500	21.0																		2		
GOLDSBORO	W.	4,500	7,000	8.0	20.6								1								3	1	1
D. J. Broadhurst, C.Ck	C.	2,500	43.2											1	1						9	12	7
GREENSBORO	W.	6,000	2.0	4.8									1								1	4	2
J. S. Michaux, Clk.	C.	4,000	9.0																		3		1
HENDERSON	W.	2,200	10.7										1	1							2		
Dr. Goode Cheatham	C.	2,000	4.250	5.6																	0		
HILLSBORO	W.	400	700	60.0	31.3																0	2	1
Dr. C. D. Jones.	C.	300	0.0																		0		
LENOIR	W.	900	1,200	0.0	0.0																0	0	
Dr. A. A. Kent.	C.	300	0.0																		0		
MARION	W.	800	1,200	0.0	0.0																0	0	
Dr. B. A. Cheek.	C.	400	0.0																		0		
MONROE	W.	1,800	2,100	6.7	19.0																1	2	
Dr. J. M. Blair.	C.	600	20.0																		1		
NEWBERN	W.	3,500	9,500	13.7	13.9								1		1	2					4	11	1
Hugh J. Lovick, C.Ck	C.	6,000	14.0					3					1	2		1					7	10	2
OXFORD	W.	1,200	2,300	20.0	25.1		1							1							2	5	1
Dr. G. A. Coggeshall.	C.	1,100	32.7										1	1							3	1	
RALEIGH	W.	8,500	16,000	9.8	17.9								1	2	2		8	1			14	3	5
T. P. Sale, Clerk B. H.	C.	7,500	14.1										2	2	1		3				9	2	3
ROCKINGHAM	W.	1,300	1,750	9.2	6.8		1														1	1	
Dr. W. M. Fowlkes.	C.	450	0.0																		0		
ROCKY MOUNT	W.	1,600	7.3																				
Dr. G. L. Wimberley.	C.	1,000	12.0	9.2																	1		
SALEM	W.	4,100	4,550	2.9	2.6																1	1	
S. C. Butler, Mayor.	C.	450	0.0																		0		1
SALISBURY	W.	4,000	6,000	15.0	16.0		1										3	1			5	8	
Dr. W. L. Crump.	C.	2,000	18.0										2								3		
SCOTLAND NECK	W.	775	1,200	0.0	0.0																0	0	
J. A. Perry, Mayor.	C.	425	0.0																		0		
TARBORO	W.	1,200	2,500	0.0	4.8																0	1	
Dr. L. L. Staton.	C.	1,300	9.2																		1		
WARRENTON	W.	970	1,735	0.0	0.0																0	0	
Dr. P. J. Macon.	C.	765	0.0																		0		
WASHINGTON	W.	3,000	5,500	16.0	13.1								1				2	1			4		2
Dr. Joshua Tayloe.	C.	2,500	9.6											1							2		
WELDON	W.	700	1,450	0.0	8.3																0	1	
J. T. Gooch, Mayor.	C.	750	16.0											1									
WILMINGTON	W.	11,000	26,500	18.5	25.3		3						1	1		2		10			17	56	5
Dr. W. D. McMillan.	C.	15,500	30.2				2	1					4	3			1	1			7	30	8
WILSON	W.	2,500	4,800	19.2	22.5								2		1						4	9	
Dr. A. Anderson.	C.	2,300	26.1					1													5		

N. B.—The reporters for the cities and towns printed in **BLACK TYPE** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

*In addition, four non-residents, white, died of consumption.

County Superintendents of Health.

Alamance	Dr. W. R. Goley.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Anson	Dr. E. S. Ashe.	Lincoln	Dr. L. A. Crowell.
Ashe	Dr. L. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. Joshua Tayloe.	Macon	Dr. F. L. Siler.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. Gilbert McLeod.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. D. M. Moser.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan		Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moye.
Craven	Dr. L. Duffy.	Polk	Dr. H. D. Shankle.
Cumberland	Dr. J. Vance McGougan.	Randolph	Dr. T. T. Ferree.
Currituck	Dr. H. M. Shaw.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames.	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. W. L. Crump.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCanless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. W. J. Judd.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. T. B. Williams.
Harnett	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Council.
Henderson	Dr. J. G. Waldrop.	Wayne	Dr. Jas. H. Powell.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. W. White.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. J. H. Wolff.	Yancey	Dr. J. L. Ray.

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your County on or before the third of each month, that he may use it in making his report to the Secretary of the State Board]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough _____ Typhoid Fever _____

Measles _____ Typhus Fever _____

Diphtheria _____ Yellow Fever _____

Scarlet Fever _____ Cholera _____

Pernicious Malarial Fever _____ Small-pox _____

Hemorrhagic Malarial Fever _____ Cerebro-spinal Meningitis _____

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks : _____

_____ M. D.

_____ 189_____ N. C.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, at Raleigh, N. C.

GEO. G. THOMAS, M. D., *Pres.*, Wilmington.
S. WESTRAY BATTLE, M. D., Asheville
W. H. HARRELL, M. D., Williamston.
JOHN WHITEHEAD, M. D., Salisbury.

C. J. O'HAGAN, M. D., Greenville.
J. D. SPICER, M. D., Goldsboro.
J. L. NICHOLSON, M. D., Richlands.
A. W. SHAFFER, M. D., Raleigh.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIII.

JANUARY, 1899.

NO. 10.

SMALLPOX AGAIN.

We are just in receipt of a letter from a County Superintendent of Health, announcing a fresh outbreak of smallpox "in another part of the county, but communicated from the old cases." He goes on to say, "There are now ten or more new cases of smallpox. I am doing the best I can, under the existing law, to prevent it spreading, by having the parties quarantined, but it is next to impossible to stop all communication. Those who violate the law are usually those who are in communication with the disease and are unable to pay a fine, so would have to be committed to jail for punishment. By so doing the inmates of the jail would be infected. So what best to do is giving our Board of Commissioners no little trouble. The present Board of Commissioners will do all they can."

Knowing the Superintendent above referred to be a man of great courage and energy, and believing what is said of the Board of County Commissioners, from an acquaintance of many years with its chairman, it seems to us that the problem ought to be solved without any very great difficulty. Ample powers are conferred by the

law, and the Superintendent and Board of Commissioners working in harmony, the latter supplying the necessary money and moral support, for when one man has to do unpopular things it is a great help to have somebody to back him up, could effectively enforce the regulations. In section 9 of the law, we find that "any person neglecting or refusing to comply with or in any way violating the rules promulgated in the manner above set forth on the subjects of quarantine and disinfection, shall be guilty of a misdemeanor, and upon conviction shall be fined or imprisoned, at the discretion of the court, not less than five nor more than fifty dollars, or less than ten nor more than thirty days." In section 10, the householder, and in section 11, the attending physician, are both subject to fine up to fifty dollars for not giving immediate notice of the presence of a case of smallpox. In sections 14 and 15 provision is made for the management of infected persons coming from another place, and for travellers from an infected place in another State. In section 23, under the head of "Vaccination," we find this: "The authorities of any city or town, or the Board of County Commis-

sioners of any county, may make such regulations and provisions for the vaccination of its inhabitants under the direction of the local or County Board of Health or a committee chosen for the purpose, and impose such penalties as they may deem necessary to protect the public health." Section 25 empowers all cities and towns to make any sanitary regulations they please.

From the above brief epitome of the more essential portions of the law bearing on smallpox, it seems to us that there is law enough, and that the proper execution of it is all that is needed to control any outbreak, if action be prompt and thorough.

That this is not as easy in practice as it sounds we freely admit. The failure to report the presence of the disease at once, from ignorance or other reasons, is one of the serious difficulties in the very beginning, the difficulty of enforcing effectively a quarantine in the country referred to by our correspondent, and the prejudice against vaccination, we do not forget. But at the same time the disease can be managed under the conditions that obtain with us in North Carolina, and in proof that it can be, we ask the reader who has followed us thus far to refer to Superintendent Long's article in the last issue of the Bulletin, and to read the following gratifying letter from the Superintendent of Northampton county, the same being a reply to a circular letter sent on the 10th inst, to all superintendents, asking for suggestions as to amendment of our health laws and also an amplification of a telegram sent before, announcing the appearance of a case of smallpox, as showing admirably in a few words "how to do it:"

JACKSON, N. C., Jan. 11, 1899.

Dr. Richard H. Lewis, Secretary State Board of Health, Raleigh N. C.

MY DEAR SIR:—Your letter of January 10th to hand. I note with regret that an effort may be made to amend the health

law of our State, (Chapter 214 Laws '93). Any interference with this law as it now stands upon our statute books would be, in my opinion, a grave mistake. This law, as it now stands, is well nigh perfect in its practical workings. I speak from experience. For instance, on January 7th, 1899, I was notified of a case of smallpox in this county (Northampton). By four o'clock in the afternoon of the same day this case was quarantined, also eight persons supposed to be infected. On January 9th I called the Board of County Commissioners together, and a compulsory vaccination, under penalty, was ordered within a radius of six miles, the infected houses being taken as a centre.

I had already telegraphed for virus, and by Tuesday night, January 10th, over 125 compulsory vaccinations had been made. This law has the approval of every intelligent man and tax-payer in this county. It gives us an efficient weapon with which to fight and stamp out contagious diseases, such as smallpox, scarlet fever, diphtheria, and others, something that we were woefully lacking in before the passage of this act.

This law is a model provision for the purpose intended; and while the superintendents of health for most counties get very small pay, their salaries being regulated by the Board of County Commissioners, yet this law gives the greatest protection to person and property of the people of this State.

It can be said of this law that it can be put in operation almost instantly. I desire to urge upon you the great importance to the people of North Carolina generally, the towns and cities especially, of keeping this law intact, as it now stands.

Very respectfully,

HENRY W. LEWIS,

*Superintendent of Health
Northampton County.*

It seems to us that Dr. Lewis has told the whole story. We wish to call attention particularly to: (1.) His promptness. Before the sun set on the day he was notified of the case of smallpox 18 miles in the country we learn from another communication) the case and eight other persons, who had been exposed, were quarantined. (2.) To the fact that he took upon himself the responsibility of ordering by wire the vac-

cine virus to avoid delay that would have been occasioned by waiting for a meeting of the Board of Commissioners to authorize its purchase. (3.) To the early meeting of the Board, their ready apprehension of the situation, and the thoroughgoing methods of management, particularly in the matter of the compulsory vaccination of every one within a radius of six miles of the infection immediately ordered by them and executed by the Superintendent.

Even at the risk of repeating it *ad nauseum*, we will say once more that the proper management of an outbreak of smallpox is summed up in (1), vaccination at the earliest possible moment of all persons who have been exposed to the disease and everybody else in the immediate neighborhood. (2.) The removal of the patient to a special hospital for such cases, and the thorough disinfection of the house and its entire contents as soon as he leaves it; (3.) the strict isolation of all persons suspected of infection in a house of detention until the incubation period has been fully passed; and (4), the most watchful and unceasing care in the matter of disinfection in all directions, in relation to the attending physician himself, the nurses, clothes, bedding, house, and everything. Should it be found that there is any disposition to ignore or violate the regulations the immediate imposition of a severe penalty would stop it. Let us suppose the violator to be one too poor to pay a fine, and presenting such a case as is described by our first correspondent. Commit him to jail—in the house of detention for the first part of his sentence, but when his period of incubation has expired have him bathed and well disinfected and clothing him in a clean suit of clothes, put him in the common jail for the remainder of his sentence. There would be no more infractions of the rules. As mentioned at the time in our columns, the prompt commitment to jail

of a man who refused to be vaccinated, by the Mayor of Charlotte, brought him to terms in less than twenty-four hours, and materially aided in the accomplishment of the vaccination of the people.

We trust our readers will pardon our ringing the changes on the fundamental principles of the management of smallpox, but that disease is the danger of the hour in this latitude, and it is one with which, we are happy to say, our people are not familiar.

At present smallpox exists in McDowell, Northampton, Edgecombe and Tyrrell counties—not widespread as yet in either locality.

A WORD WITH THE BOARDS OF COUNTY COMMISSIONERS OF THE STATE.

Smallpox is at this present writing a menace to the people of our whole State. It already exists in four counties in the State, as mentioned above. It is liable to spread from those counties, or centres of infection, not only to people in the immediate neighborhood, but in these days of easy and rapid transit, to more remote communities. We are also threatened from our sister States to both the north and south of us. As is now generally known it exists in Norfolk and its neighborhood, especially Berkley, from what we can learn. The city of Norfolk itself seems to be managing its outbreak well, but we do not feel so well satisfied about the outlying districts. Owing to the intimate relations, both business and social, existing between Norfolk and the eastern section of the State particularly, a sharp eye should be kept on persons coming thence, or from the towns adjacent to it. As the disease is limited almost entirely to negroes, we think it would be well, for the present at least, to limit anything like a strict surveillance to that class. There are also 45 cases in Sumter county, S. C., and travelers from that locality should be regarded with a watchful eye.

The mere statement of the facts just enumerated demonstrates the reality of the danger that threatens us. The question now before us is how to avert the danger. The prime responsibility rests upon the superintendents of health, whose duty it is to see that each case of the more dangerous contagious diseases is promptly quarantined and that thorough disinfection is employed, but inasmuch as he is not possessed of the means to successfully grapple with an outbreak of any size unless supplied by the County Commissioners, the latter, it seems to us, are almost equally responsible. It is a very grave responsibility, and should be most seriously considered. As there is no way of telling when a case may appear, and as the necessary preparations for properly caring for it cannot be made instantly, it is clearly advisable, to express it very mildly, that these preparations should be made in advance, partially at any rate, so that they can be completed without loss of time. In the very first place, the most important step, the vaccination of the people should be taken without delay. The superintendent should be authorized to purchase a sufficient supply of good vaccine virus that he may vaccinate the children of the public schools, the inmates of the county home and of the jail, and all persons unable to pay. If the danger be universal other physicians should be employed to assist him. The Board of Commissioners is fully empowered in section 23 of the law to make such regulations and impose such penalties as may be necessary to enforce vaccination, and it ought not to hesitate about doing it. Thorough vaccination of all the people solves completely the smallpox problem. In the second place arrangements should be made for taking immediate possession of two houses suitably located when the occasion arises for isolating and caring for patients and those who have been exposed to the dis-

ease until a sufficient time has elapsed to prove that they are not infected. When the time comes these establishments must be manned with the necessary guards, nurses, cooks, etc., that the requirements of simple humanity may be met. These arrangements of course would cost something, but as the cities and towns would be peculiarly endangered, from a business as well as a medical point of view, it would be to the mutual interest of both town and county to join forces in this matter, thereby dividing the expense. But after all what would the expenditure amount to in comparison to the suffering and death and loss in business that a neglected epidemic of smallpox would surely entail?

We wish to call the attention of the commissioners of those counties having no Superintendent of Health to the fact that they have no legal machinery for the management and control of contagious diseases. The law invests these powers in an official whose title is County Superintendent of Health and explicitly, in Section 5, commands the commissioners of every county to elect such an officer. Why some boards, in view of their oath of office, have failed to perform this plain duty we have never been able to understand, but some boards have failed to do so. We have received an explanation from one very small county in the statement that no doctor could be found who was willing to take the place; but what inducement was offered the doctor was not mentioned. The present boards being all new boards, and but recently installed in office, we hope they will repair this serious omission of their predecessors. You may not realize ordinarily the value of a Superintendent of Health, but if smallpox should invade your county, as may happen any day, you will feel the need of some one legally empowered and required to take charge of the management of it. Gentlemen, "now is the ac-

cepted time." Act at your next meeting in February.

In conclusion, we hope you will pardon us for saying a word in regard to the compensation of Superintendents of Health. As a rule, from what we can learn, they are underpaid, and in one or more counties the office is farmed out to the lowest bidder—a sure guarantee of an inferior man, who would, in all probability, not earn the pittance he accepts. But it is not so much in regard to the pay under the usual circumstances we wish to speak as it is to the remuneration during the presence of smallpox. Believing the men now filling the office of County Commissioner to be men of intelligence and character and just-minded we take it that there is probably no reason for the suggestion; but you will pardon us for suggesting that when the superintendent has to deal with an outbreak of smallpox he deserves reasonable extra compensation. His patients are apt to become afraid of him while engaged in this work, and he is forced to make a much greater personal sacrifice than ought in justice to be demanded of him.

REVIEW OF DISEASES FOR DECEMBER, 1898.

(EIGHTY COUNTIES REPORTING.)

Eighty-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of December the follow-

ing diseases have been reported from the counties named:

MEASLES.—Cumberland, 4; Greene, 1; Henderson, 14.

WHOOPIING-COUGH.—Currituck, several; Halifax, 12; Mecklenburg; Pasquotank, many; Surry, 4; Union, epidemic; Vance, a few.

SCARLATINA.—Granville, 2; New Hanover, 4.

DIPHTHERIA.—Guilford, 1; Iredell, several; Rockingham; Surry.

TYPHOID FEVER.—Ashe, 4; Beaufort, 1; Bertie, 1; Buncombe, 1; Caldwell, 4; Columbus, 1; Greene, 4; Halifax, 2; Harnett, several; Hertford, 5; Iredell, 3; Jackson, 4; Macon, 2; Madison, 2; Mecklenburg; Mitchell, 10; New Hanover, 1; Northampton, 2; Onslow, 4; Pasquotank, 1; Pender, 2; Pitt; Rockingham; Ruthersford, 1; Sampson, 1; Surry, 1; Watauga, 5; Wayne, 6; Wilson, 2—29 counties.

MALARIAL FEVER.—Bertie, in all parts; Currituck; Durham; Gates; Halifax; Hertford; Martin; New Hanover; Northampton; Orange, a few cases; Washington; Wilson, in all parts—13 counties.

MALARIAL FEVER, HEMORRHAGIC.—Halifax, 1; Hertford, 4; Martin, 1; New Hanover, 1; Northampton, 5; Washington, 1.

INFLUENZA.—Alamance; Chatham; Clay; Cumberland; Forsyth; Gaston; Henderson; Iredell, mild, in all parts; Jackson; Lincoln; McDowell, in all parts; Macon; Martin, in all parts; Mecklenburg; Northampton; Person; Robeson; Rockingham; Sampson; Surry, in all parts; Transylvania; Union; Vance; Wake; Wayne—25 counties.

PNEUMONIA.—Alamance; Ashe; Chatham; Clay; Columbus; Currituck; Forsyth, in all parts; Gaston; Jackson; McDowell; Onslow; Person; Stokes, in all parts; Watauga—14 counties.

PLEURISY.—Person.

RHEUMATISM.—Orange.

TONSILLITIS.—Columbus.

VARICELLA.—Currituck.

SMALLPOX.—McDowell, 5 ; New Hanover, 1 ; Pasquotank, 2.

CHOLERA, IN CHICKENS.—Columbus.

CHOLERA, IN HOGS.—Ashe ; Nash.

STAGGERS, IN HORSES.—Union.

No diseases are reported from Alexander, Bladen, Burke, Cabarrus, Carteret, Catawba, Cherokee, Cleveland, Davidson, Davie, Edgecombe, Franklin, Haywood, Johnston, Jones, Moore, Nash, Perquimans, Polk, Randolph, Rowan, Swain, Warren, Wilkes, Yadkin and Yancey.

No reports have been received from Anson, Brunswick, Craven and Duplin.

Summary of Mortuary Reports for December. 1898 (Twenty-four Towns).

Only those towns from which certified reports are received are included:

	<i>White. Col'd. Total.</i>		
Aggregate population	89,648	68,640	158,288
Aggregate deaths	69	101	170
Representing temporary annual death rate per 1,000	9.3	17.6	12.8
<i>Causes of Death.</i>			
Typhoid fever	1	1	2
Malarial fever	1	2	3
Whooping-cough	0	1	1
Pneumonia	6	12	18
Consumption	5	21	26
Brain diseases	4	6	10
Heart diseases	8	7	15
Neurotic diseases	2	2	4
Diarrhoeal diseases	1	0	1
All other diseases	40	43	83
Accident	1	6	7
	69	101	170
Deaths under five years	23	26	49
Still-born	9	19	28

Mortuary Report for December, 1898.

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEMPO- RARY ANNUAL DEATH- RATE PER 1,000.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping- Cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL by RACES.	TOTAL by TOWNS.	Deaths Under 5 Years.	Still-born.
		By Races.	Total.																					
ASHEVILLE	W.	8,000	12 0	17.5	..	..	..	..	..	..	..	..	..	..	1	..	6	1	..	..	8	11	10	1
Dr. M. H. Fletcher.	C.	5,000	26 4		..	..	..	..	..	..	4	3	..	..	..	..	3	1	..	..	11	16	1	1
CHARLOTTE	W.	17,153	10.5	11.5	1	..	..	..	..	..	2	..	..	1	..	..	11	..	..	..	15	15	7	3
Dr. F. O. Hawley, D.O.	C.	9,000	13 3		..	..	..	1	..	..	..	..	2	..	..	..	6	1	..	..	10	5	7	3
DURHAM	W.	4,000	6 0	4.0	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	2	2	1	..
Dr. J. M. Manning.	C.	2,000	0 0		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
FAYETTEVILLE	W.	3,500	6.8	6.0	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	2	3	..	..
Dr. J. V. McGougan.	C.	2,500	4 8		..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	3	..	..
GOLDSBORO	W.	4,500	0 0	12	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	0	7	1	..
D. J. Broadhurst, C. Ck	C.	2,500	33 6		..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	7	1	..	..
GREENSBORO	W.	6,000	10 0	20.4	..	..	..	..	..	..	1	1	..	..	..	..	2	..	..	..	5	12	3	..
J. S. Michaux, Ck.	C.	4,000	35 0		..	..	..	..	..	..	2	2	2	..	..	..	4	2	..	..	12	17	3	..
HENDERSON	W.	2,200	5.3	5.6	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	..	..
Dr. Goode Cheatham	C.	2,000	6 0		..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..
HILLSBORO	W.	400	0 0	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..
Dr. C. D. Jones.	C.	300	0 0		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..
LENOIR	W.	900	0 0	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..
Dr. A. A. Kent.	C.	300	0 0		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..
MARION	W.	800	0 0	10.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	1
Dr. B. A. Cheek.	C.	400	30 0		..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	..	1
MONROE	W.	1,800	13.3	15.0	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	3	..	..
Dr. J. M. Blair.	C.	600	20 0		..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	3	..	..
NEWBERN	W.	3,500	3.4	6.3	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	3	..
Hugh J. Lovick, C. Ck	C.	6,000	8 0		..	..	..	..	..	..	1	2	..	..	..	..	1	..	..	..	4	5	1	6
OXFORD	W.	1,300	0 0	5.2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	1	..
Dr. G. A. Coggeshall.	C.	1,100	10.9		..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	1	1	..
RALEIGH	W.	8,500	7 0	11.2	..	..	..	..	..	..	1	1	..	1	..	..	2	..	..	..	5	7	4	..
P. P. Sale, Clerk B. H.	C.	7,500	16 0		..	..	..	..	..	..	4	1	1	1	..	..	3	..	..	..	10	7	3	..
ROCKINGHAM	W.	1,300	0 0	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..
Dr. W. M. Fowlkes.	C.	450	0 0		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..
ROCKY MOUNT	W.	1,600	7 0	4.6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	1	..
Dr. G. L. Wimberley.	C.	1,000	0 0		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	1	..
SALEM	W.	4,100	14 6	13.2	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	5	5	..	..
S. C. Butner, Mayor.	C.	450	0 0		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	5	..	..
SCOTLAND NECK	W.	775	15.5	10.0	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	1	..	..
J. A. Perry, Mayor.	C.	425	0 0		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..
TARBORO	W.	1,200	10 0	4.8	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..
Dr. L. L. Staton.	C.	1,300	0 0		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	1	..	..
WARRENTON	W.	970	0 0	0.0	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..
Dr. P. J. Macon	C.	755	0 0		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	0	0	..	..
WASHINGTON	W.	3,000	12 0	22.0	..	..	..	..	..	..	2	3	..	1	1	1	1	..	..	..	8	11	..	1
Dr. Joshua Tayloe.	C.	2,500	38		..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	3	3	..	..
WELDON	W.	700	0 0	33.1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	

County Superintendents of Health.

Alamance	Dr. W. R. Goley.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Anson	Dr. E. S. Ashe.	Lincoln	Dr. L. A. Crowell.
Ashe	Dr. L. C. Gentry.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. Joshua Tayloe.	Macon	Dr. F. L. Siler.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	
Cabarrus	Dr. J. S. Lafferty.	Moore	Dr. Gilbert McLeod.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clarke.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. D. M. Moser.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing
Chowan		Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moye.
Craven	Dr. L. Duffy.	Polk	Dr. H. D. Shankle.
Cumberland	Dr. J. Vance McGougan.	Randolph	Dr. T. T. Ferree.
Currituck	Dr. H. M. Shaw.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. W. L. Crump.
Duplin	Dr. F. H. Arthur.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsyth	Dr. John Bynum.	Stokes	Dr. W. L. McCanless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. W. J. Judd.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. T. B. Williams.
Harnett	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Council.
Henderson	Dr. J. G. Waldrop	Wayne	Dr. Jas. H. Powell.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. W. White.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. J. H. Wolff.	Vancey	Dr. J. L. Ray.

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your County on or before the third of each month, that he may use it in making his report to the Secretary of the State Board]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough	_____	Typhoid Fever	_____
Measles	_____	Typhus Fever	_____
Diphtheria	_____	Yellow Fever	_____
Scarlet Fever	_____	Cholera	_____
Pernicious Malarial Fever	_____	Small-pox	_____
Hemorrhagic Malarial Fever	_____	Cerebro-spinal Meningitis	_____

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks :

_____ M. D.

BULLETIN

OF THE

North Carolina Board of Health.

Published Monthly at the Office of Secretary of the Board, Raleigh, N. C.

GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	C. J. O'HAGAN, M. D., Greenville.
S. WESTRAY BATTLE, M. D., Asheville.	J. D. SPICER, M. D., Goldsboro.
W. H. HARRELL, M. D., Williamston.	J. L. NICHOLSON, M. D., Richlands.
JOHN WHITEHEAD, M. D., Salisbury.	A. W. SHAFFER, SAN. ENG., Raleigh.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

VOL. XIII.

FEBRUARY-MARCH, 1899.

Nos. 11-12.

Explanation.

While our readers seem to have borne with equanimity the failure of the February BULLETIN to appear, we feel that in justice to ourself we should explain it. It was not issued because the question as to who should do the public printing was not settled in time by the General Assembly, and it therefore could not be printed. But the patient reader shall not go unrewarded. We give him two numbers in one.

Some Additional Remarks on Smallpox.

We almost feel as if we ought to apologize to our readers for dwelling so much upon the subject of smallpox, but it is becoming day by day a more and more serious question with us. It is constantly springing up in new places, and now present seven *foci* of infection in the State, to say nothing of Virginia and South Carolina. The management of smallpox outbreaks is theoretically simple and easy, and so it would be practically but

for obstructions and difficulties for which we fear our own profession is largely to blame. For example: 1. The reluctance in some cases on the part of the attending physician to make the positive diagnosis of smallpox. He hems and haws, perhaps, and finally winds up by calling for an expert, thereby losing valuable time, to say the least. We hope we will not be misunderstood. There are undoubtedly cases now and then which are not easy of diagnosis, especially to one who has, perhaps, never seen a case, but under the conditions now prevailing, with smallpox exerywhere, and in view of the universally recognized opinion that during the prevalence of that disease the proper thing to do, whenever there is any doubt about the diagnosis, is to give smallpox the benefit of the doubt, it does seem to us that except in very rare instances there ought to be no hesitation about it. But there too often is. Only the other day one of our best men, and a warm friend of ours, "hollered" for an "expert." We requested a distinguished member of the Board of large experience

to go to his aid. He did so promptly. Our friend wrote thanking us for sending him, etc., which we appreciated, but not being in a very amiable frame of mind about his "playing the baby act," as we call it, it was with deep, inward, though possibly wicked, satisfaction we read this: "Dr. — came, saw the case and announced that 'so plain a case of smallpox was it that the wayfaring man, though a—fool, could tell it *afar off*.'" While the expert style of expression might be regarded possibly by some as a trifle strong, it was picturesque and unquestionably effective in its influence on public opinion.

2. The disposition exhibited by some physicians, although they have nothing to do with the case, and often refuse an invitation to see it for fear of the effect on their practice, to belittle it and cast doubt on the diagnosis, thereby unsettling the public mind and directly encouraging the people in their opposition to vaccination or other necessary precautions that may be irksome or inconvenient. In a letter from a leading citizen of one of our towns in which this state of affairs existed, in spite of the unanimous opinion of all of the four physicians who saw the cases in consultation, he said that at least eighty per cent. of the people rebelled against the preventive regulations ordered, while he was satisfied they would not only submit but assist in carrying them out if the diagnosis should be confirmed by an expert from a distance. Now it is perfectly apparent that the hostile attitude of the public was incited and fostered by the physicians who made light of the diagnosis of smallpox, calling it chickenpox, when they had never seen it. Unfortunately one of the cases of "chickenpox" died, and the expert who was sent said there was no doubt about the nature

of the disease—that it was smallpox. Such conduct strikes us as being extremely reprehensible and inexcusable. It is directly against the interests of the community, and must react injuriously on those so conducting themselves. If when a case is diagnosed as smallpox all the physicians in the town who have not seen it assume with the public that it is correct, there would be very little trouble in enforcing the necessary regulations.

3. Prejudice against vaccination. This seems to be more marked among the operatives of cotton mills than any other class. This is a very serious matter, for owing to their being crowded together they present a most favorable field for the spread of smallpox. We are mindful, of course, of the natural reluctance of one who earns his daily bread with his hands to jeopardize for a time even the use of his hands, but the danger of disability is exaggerated beyond measure. As a matter of fact we fear that the objection to vaccination, not only on the part of mill operatives but unfortunately of a great many other people, is simple blind prejudice. As this attitude of mind is nearly always associated with ignorance the subjects are practically not amenable to reason. So that for the protection of the community some degree of compulsion is necessary. As suggested in a former issue of the BULLETIN, it has occurred to us that an announcement on the part of the employer that the cases of disability from vaccination pay sufficient to prevent suffering would be continued during such disability would remove the basis of a reasonable objection on the part of the employee. As the tendency among operatives, upon the appearance among them of smallpox, is to scatter and seek employment at other mills, it strikes us that an arrangement or agreement among all mill owners not to employ hands from

other mills unless they brought a certificate from their last employer stating time of departure and asserting absence of smallpox at said time, would be a great protection.

We append our last circular on the subject:

SMALL-POX—ITS PREVENTION.

Smallpox is one of the most contagious and one of the most loathsome of all diseases.

It is now widely scattered over the United States, and is prevailing at twenty points in our own State to-day. There is danger of a widespread epidemic among our people.

Under these circumstances every eruption appearing after two or three days of headache, backache and fever, or even after merely general bad feeling, especially if most prominent on the face and hands, should be regarded as smallpox, and the proper precautions taken promptly and continued until the patient is seen by a reliable physician.

Be not deceived by false prophets who seek popularity by prophesying smooth things and call it chickenpox. According to one of the highest authorities, with a very few exceptions, chickenpox is confined exclusively to childhood up to the age of twelve, and is rare after ten. So, if the patient is past childhood, it is almost surely smallpox, although it may be a mild attack. But mild cases can cause the severest form in the unvaccinated.

Fortunately, thanks to the genius and courage of the immortal country doctor, Edward Jenner, we have almost sure protection against the disease within the reach of all in vaccination. If properly done it is practically as certain a preventive as a previous attack of smallpox itself. In Germany, with its fifty millions of people, in 1871, before vaccination was made compulsory, the number

of deaths from smallpox was 143,000, while in 1897, under compulsory vaccination, it was only 116.

When smallpox is present in a community, those who have been vaccinated before should be vaccinated again, as its virtues disappear more or less with time.

There seems to be a prejudice against vaccination on the part of some. This prejudice is due to ignorance of the facts. The effects of vaccination are really serious so seldom that they need not be taken into account. With the improved virus from the cow, there is not the slightest danger of transmitting such human diseases as consumption, scrofula or syphilis.

Having this sure preventive right at hand, a panic on the subject of smallpox is utterly inexcusable. Those who are vaccinated—but only those—can laugh at smallpox, and go on with their usual business in confidence.

Whenever smallpox appears in a community it is all-important that the sick person should be separated from the well as soon as possible. No one should visit him, and only his physician and nurse should see him. In fact, when smallpox is prevailing, visits of mere sympathy or curiosity should not be paid to any case of sickness until its nature has been declared by the attending physician.

All persons who have been exposed to smallpox should be vaccinated immediately, and detained or quarantined in comfortable quarters for fifteen days from the time of exposure—until the danger of their having it has passed. Before leaving the house of detention, they should take a thorough bath with warm water and soap and immediately after that another with some suitable disinfectant, and put on clean clothes from the skin out. The clothes in which they were exposed should be boiled or otherwise disinfected before being worn again, or re-

moved from the house. The poison of smallpox can be carried in the clothes for an indefinite time.

Upon the occurrence of smallpox in a community the people should interest themselves in seeing that the regulations to prevent its spread are obeyed, for the sake of the business of the town, as well as their own personal safety. This applies with special force to the operatives in factories and mills, for the reason that the shutting down of a mill is such a serious matter to them. Employment elsewhere cannot be expected, because no mill would receive hands from another mill among whose people the disease existed. Operatives at work are less liable to contract the disease than if idle and engaged in social visiting.

After the death or recovery of a person who has had smallpox, everything that has been in contact with him should be burned or disinfected in the most thorough manner by the health officer.

Under the law (chapter 214, Laws of 1883), vaccination, quarantine, etc., are under the control of the county superintendent of health, or the medical health officer of a city or town where there is one.

Ample powers are conferred by sections 23 and 25 upon Boards of County Commissioners, and the authorities of cities and towns to enforce the necessary rules, the language of one of the sections being that they are authorized to make such regulations, pay such fees and salaries and *impose such penalties* as in their judgment may be necessary for the protection of the public health.

The reason for such law is that the State does not permit individual citizens for a mere whim or prejudice to endanger the health and lives and business of their more reasonable neighbors.

Let every one be vaccinated promptly.

RICHARD H. LEWIS, M. D.,
Secretary State Board of Health.

The above was given to the press several weeks ago, and as soon as the printing can be arranged, will be distributed as a circular.

Smallpox Inspector for the State.

Doctors Thomas and O'Hagan, a committee of the Board, made, the first week in March, an examination into the smallpox conditions in the eastern part of the State. They found them to be so threatening that the President called a special meeting of the Board at Raleigh, Sunday, March 5th, to consider them. The action taken is stated in the following extract from the minutes: "In view of the gravity of the situation, increased by the inefficiency found in some places and the widespread opposition to vaccination found generally, it was unanimously decided, after discussion, to ask the Governor to authorize the expenditure of a sufficient amount of the contingent fund conditionally appropriated in section 29 of the Act in Relation to the Board of Health for visitations of pestilential disease, to employ a special inspector to visit all infected points, thoroughly inform himself of the situation, and advise the local authorities as to the best management of the outbreak in every respect, including particularly the value and importance of vaccination, said inspector to receive instructions from and report to the Secretary of the Board." Having adopted this resolution, the Board repaired to the Executive Mansion, where it met with a pleasant reception from His Excellency, who showed an intelligent appreciation of the situation, and promptly authorized the proposed expenditure for the purpose mentioned. In completion of this action on the part of the Board, Dr. Henry F. Long, of Statesville, was appointed smallpox in-

spector. Our readers will remember the excellent paper by Dr. Long on the management of a considerable outbreak in his own county of Iredell, which appeared in the January number. We deem ourselves fortunate in having secured his services, for in addition to being a man of sense and force he has had exactly the experience that will fit our conditions. We bespeak for him from the communities he may visit a respectful hearing of his advice and suggestions—they will be worth listening to.

Upon inquiry of the committee, we learned that wherever they found the physicians of a community united and harmonious there was no trouble in getting the people vaccinated and the regulations carried out—that whenever there was any it could nearly always be traced to some "kicking" doctor. This coincides with our own observation, as has already been expressed, but we do hope that our brethren who are constitutionally disposed to take "the other side" will for the public good carefully avoid saying or doing anything that might be seized on by the people as an excuse. Let's all pull together.

The Present Situation.

(March 17th).

Smallpox is reported in the following counties: Currituck, Pasquotank, Perquimans, Gates, Bertie, Chowan, Tyrrell (?), Columbus, Wayne, Wilson, Edgecombe, Halifax, Northampton, Johnston, Wake, Warren, Moore, Alamance and Guilford.

As superintendents do not always report when the disease has become extinct it is not unlikely that some of the nineteen counties named are now free from it. Until we are notified to the contrary by

the health officer, we must assume the disease to be still present in his county. We hope superintendents will bear this in mind. The number of cases in each county is small—in several instances being only one. The disease continues of a mild type, but seems to be gaining somewhat in virulence, and every now and then a death occurs. Our reports do not justify a more detailed statement.

March 30—Situation very much more satisfactory.

Review of Diseases for January, 1899.

(SEVENTY-SIX COUNTIES REPORTING).

Eighty-one counties had Superintendents of Health February 1st.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of January the following diseases have been reported from the counties named:

MEASLES.—Gaston; Jones, several; Northampton, many; Pitt; Polk, 26; Wilson, 20

WHOOPING COUGH.—Alamance, 4; Beaufort, 20; Bladen, a few; Caldwell, 10; Cherokee, 3; Durham, 1; Mecklenburg, 1; New Hanover, 1; Pasquotank; Perquimans, 7; Robeson; Rockingham, Union, 15; Wilson, 10—14 counties.

SCARLATINA.—Mecklenburg, 1; New Hanover, 1.

DIPHTHERIA.—Ashe, 1; Guilford, 1; Perquimans, 1; Richmond, 1; Rockingham; Surry, 2—6 counties.

TYPHOID FEVER.—Alamance, a few; Ashe, 2; Bertie, 1; Caldwell, 5; Catawba, 1; Guilford, 1; Harnett, a few; Hertford, 2; Iredell, 1; Macon, 2; Mitchell, 10; Nash, a very few; New Hanover, 3; Onslow, 1; Pasquotank, 1; Pender, 2; Perquimans, 1; Pitt; Robeson; Rockingham; Rutherford, 1; Wayne, 2; Wilson, 1—23 counties.

MALARIAL FEVER.—Gates; Halifax; Hertford; Nash, a few cases; Onslow.

MALARIAL FEVER, HEMORRHAGIC—Hertford, 2; Onslow, 1.

SMALLPOX.—Bertie, 1; Edgecombe, 26; Gates, 1; McDowell, 15; Northampton, 3; Pasquotank, 12; Wilson, 1—7 counties.

INFLUENZA.—Alamance; Carteret; Columbus; Currituck; Davidson, general; Durham, general; Forsyth, general; Gaston, general; Gates; Granville; Greene; Guilford; Henderson, general; Iredell, general; Jackson; Jones; Macon, general; Madison, general; Mecklenburg, general; Moore; New Hanover, general; Onslow, general; Pasquotank; Pitt; Polk, general; Robeson; Rockingham; Rutherford, Sampson, Stokes, Surry, Swain, general; Transylvania; Union; Vance, general; Wake; Washington, general; Watauga; Yadkin—39 counties.

PNEUMONIA.—Alamance; Ashe; Bladen; Chatham; Cleveland; Currituck; Davie; Forsyth; Gaston; Guilford; Halifax; Jackson; Jones; Mecklenburg; Moore; Onslow; Person; Sampson; Stokes; Watauga—20 counties.

MUMPS.—Cleveland; Halifax; Wake.

RHEUMATISM.—Sampson.

ROSEOLA.—Caldwell; Chatham; Transylvania.

TONSILLITIS.—Columbus.

VARICELLA.—Caldwell; Currituck; McDowell.

CHOLERA, IN HOGS.—Gaston; Jackson.

HYDROPHOBIA, IN DOGS.—Iredell.

No diseases are reported from Alexander, Buncombe, Burke, Clay, Cumberland, Franklin, Haywood, Johnston, Orange, Randolph, Warren, Wilkes and Yancey.

No reports have been received from Anson, Craven, Duplin, Lincoln and Rowan.

Summary of Mortuary Reports for January, 1899.

(TWENTY-FOUR TOWNS).

Only those towns from which certified reports are received are included:

White. Col'd. Total.

Aggregate population.....	86,348	67,040	153,388
Aggregate deaths...	79	84	163
Representing temporary annual death rate per 1,000	11.0	15.0	12.7
<i>Causes of Death.</i>			
Typhoid fever.....	3	0	3
Malarial fever.....	0	1	1
Diphtheria	3	0	3
Pneumonia.....	12	13	25
Consumption	8	13	21
Brain diseases.....	8	4	12
Heart diseases.....	10	4	14
Neurotic diseases...	1	1	2
Diarrhoeal diseases,	1	4	5
All other diseases..	31	39	70
Accident.....	2	4	6
Violence (hanged by law).....	0	1	1
	<hr/> 79	<hr/> 84	<hr/> 163
Deaths under five years.....	10	19	29
Still-born.....	7	20	27

Mortuary Report for January, 1899.

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEMPORARY ANNUAL DEATH RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS.		Deaths under five years, Still-born.	
		By Races.	Total.	By Races.	Total.																	By Races.	By Towns.		
Asheville	W.	8,000	13,000	4.5	7.4	...	...	...	...	...	...	2	1	1	...	...	...	...	...	...	...	3	5	8	2
Dr. M. H. Fletcher.	C.	5,000		12.0		...	...	...	...	...	...	...	1	1	...	...	1	2	...	...	...	5	7	3	2
Charlotte	W.	17,153		3.5	5.5	...	...	...	...	...	...	...	...	1	...	3	1	...	...	...	...	7	12	1	4
Dr. F. O. Hawley.	C.	9,000	26,153	9.3		...	...	...	...	...	...	3	1	1	1	1	1	...	...	...	...	7	12	1	4
Durham	W.	4,000	6,000	21.0	16.6	...	...	...	...	...	...	2	1	...	...	...	4	...	...	...	...	7	8	3	...
Dr. J. M. Manning.	C.	2,000		6.0		...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	2	1	...
Fayetteville	W.	3,500		17.1	12.0	...	...	...	...	...	...	...	...	3	1	...	1	...	...	...	...	5	6	...	...
Dr. J. V. McGowan.	C.	2,500	6,000	4.8		...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	6	...	...
Greensboro	W.	6,000	10,000	10.0	13.2	...	...	...	...	...	...	1	1	1	...	1	1	...	...	...	...	5	11	...	1
J. S. Michaux, C. Ck.	C.	4,000		18.0		...	...	...	...	...	...	1	1	1	...	...	3	...	...	...	...	6	...	...	...
Henderson	W.	2,250		0.0	11.3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	4	4	2
Dr. Goode Cheatham.	C.	2,000	4,250	24.0		...	...	...	...	...	...	...	1	3	...	1	2	...	...	...	...	4	4	4	2
Hillsboro	W.	400	700	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Dr. C. D. Jones.	C.	300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Lenoir	W.	900	1,200	13.3	10.0	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	1	...	...
Dr. A. A. Kent.	C.	300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1	...	...
Marion	W.	800	1,200	15.0	20.0	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	...	...
Dr. B. A. Cheek.	C.	400		30.0		...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	2	...	...
Newbern	W.	3,500	9,500	13.7	18.9	...	1	...	...	...	...	2	1	...	1	...	...	...	...	...	...	4	15	2	1
Hugh J. Lovick, C. Ck.	C.	6,000		22.0		...	...	...	...	...	...	1	1	...	...	7	...	...	...	...	...	11	...	...	...
Oxford	W.	1,200	2,300	10.0	10.4	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	1	2	...	...
Dr. G. A. Coggeshall.	C.	1,100		10.9		...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	2	...	...
Raleigh	W.	8,500	16,000	22.6	19.5	...	...	...	...	...	...	1	2	4	1	...	8	...	...	...	...	16	26	3	...
T. P. Sale, Clerk B. H.	C.	7,500		16.0		...	...	...	...	...	...	1	1	2	...	...	4	1	...	...	...	10	...	4	2
Rockingham	W.	1,300	1,750	9.2	6.8	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...
Dr. W. M. Fowlkes.	C.	450		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
Rocky Mount	W.	1,600	2,600	15.0	9.3	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	2	2	...	...
Dr. G. L. Wimberly.	C.	1,000		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	2	...	...
Salem	W.	4,100	4,550	17.6	15.8	...	...	...	...	...	...	...	...	1	...	...	5	...	...	...	...	6	6	2	...
S. C. Butner, Mayor.	C.	450		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
Salisbury	W.	1,900	6,000	18.2	24.0	...	...	1	...	2	1	1	...	...	...	1	...	...	...	...	...	6	12	1	2
Dr. W. W. McKenzie.	C.	2,000		36.0		...	...	...	...	3	2	...	1	...	...	...	...	...	...	...	...	6	...	1	...
Scotland Neck	W.	775	1,200	15.5	10.0	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	1	...	...
J. A. Perry, Mayor.	C.	425		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
Tarboro	W.	1,200	2,500	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
Dr. L. L. Staton.	C.	1,300		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
Warrenton	W.	970	1,735	12.4	13.8	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	2	...	...
Dr. P. J. Macon.	C.	765		15.7		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2	...	...
Washington	W.	3,000	5,500	12.0	15.3	...	...	...	...	...	...	1	1	1	...	...	...	...	...	...	...	3	7	...	...
Dr. Joshua Tayloe.	C.	2,500		19.2		...	...	...	...	...	...	1	1	...	...	1	1	...	...	...	...	4	...	...	...
Weldon	W.	700	1,450	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0	...	...
J. T. Goode, Mayor.	C.	750		0.0		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	...	...	...
Wilmington	W.	10,000	25,000	10.8	13.4	1	...	...	...	...	...	1	...	...	...	7	...	...	...	...	...	9	28	1	2
Dr. W. D. McMillan.	C.	15,000		15.2		...	...	...	...	...	...	2	1	...	2	11	...	...	...	...	...	19	...	...	4
Witson	W.	2,500	1,800	9.6	22.5	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	2	9	2	...
Dr. Albert Anderson.	C.	2,300		36.5		...	...	...	...	...	...	1	2	...	...	3	1	...	...	...	...	4	...		

Review of Diseases for February, 1899.

(SEVENTY-SIX COUNTIES REPORTING).

Eighty-two counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of February the following diseases have been reported from the counties named:

MEASLES.—Gaston; Harnett; Jones, epidemic; New Hanover, 5; Pitt; Richmond, 10; Rockingham; Stokes, 1; Swain; Wayne, 5—10 counties.

WHOOPING-COUGH.—Beaufort, 10; Mecklenburg; Pasquotank; Perquimans, 40; Pitt; Rockingham; Union; Vance, a few; Warren, a few; Wayne, 8; Wilson, 10—11 counties.

DIPHTHERIA.—Cleveland, 2; Surry, 1.

TYPHOID FEVER.—Buncombe, 1; Columbus, 2; Jackson, 4; Jones, 1; Lincoln, 1; Macon, 2; Mitchell, a few; Onslow, 2; Pasquotank, 1; Pender, 5; Perquimans, 1; Rockingham; Rutherford, 1; Stokes, 1—14 counties.

MALARIAL FEVER.—Catawba, a few; Columbus; Hertford; Johnston; New Hanover; Onslow—6 counties.

MALARIAL FEVER, PERNICIOUS.—New Hanover.

MALARIAL FEVER, HEMORRHAGIC.—Hertford, 1; Johnston, 1; New Hanover, 1; Onslow, 1.

GERMAN MEASLES.—Mecklenburg.

INFLUENZA.—Alamance; Bertie, Burke, general; Carteret; Cleveland; Columbus; Currituck; Durham, Forsyth, general; Gaston; Gates; Granville; Haywood, Henderson; Iredell; Jackson, general; Johnston; Jones; McDowell; Macon, general; Madison; Martin, general; Mecklenburg; Moore, New Hanover, general; Onslow; Pasquotank; Pender; Person; Rockingham, general; Rutherford; Stokes, Surry, general; Swain; Transylvania; Union, general; Vance; Watauga, Wayne, general; Wilkes; Yadkin; Yancey—42 counties.

MUMPS.—Cleveland.

PNEUMONIA.—Alamance; Buncombe; Burke; Caldwell; Catawba; Cleveland; Currituck; Forsyth; Gaston; Guilford; Jackson; Jones; Lincoln; Madison; Mecklenburg; Moore; Onslow; Pasquotank; Perquimans; Person; Union; Vance; Watauga—22 counties.

ROSEOLA.—Caldwell; Chatham; Cumberland; Transylvania.

SMALLPOX.—Alamance, 3; Bertie, 8; Columbus, 3; Currituck, 2; Edgecombe, 10; Gates, several; Halifax, 8; Johnston, 1; McDowell, 2; Northampton, 6; Pasquotank, 15; Perquimans, 1; Wake, 1; Wilson, 1—14 counties.

VARICELLA.—McDowell.

CHOLERA, IN HOGS.—Martin; Perquimans; Watauga; Wayne.

No diseases are reported from Alexander, Bladen, Davidson, Davie, Franklin, Greene, Orange, Polk, Randolph, Sampson and Washington.

No reports have been received from Anson, Ashe, Cherokee, Clay, Craven and Duplin.

**Summary of Mortuary Reports for
February, 1899.**

(TWENTY-FOUR TOWNS).

Only those towns from which certified
reports are received are included

	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population	90,163	64,440	154,603
Aggregate deaths...	95	118	213
Representing temporary annual death rate per 1,000	12.6	22.0	16.5
<i>Causes of Death.</i>			
Typhoid fever	0	1	1
Malarial fever.	1	0	1
Whooping cough...	2	0	2
Pneumonia.....	25	20	45
Consumption	13	16	29
Brain diseases.....	10	7	17
Heart diseases.....	5	7	12
Neurotic diseases...	3	0	3
Diarrhoeal diseases	2	4	6
All other diseases..	34	57	91
Accident.....	0	6	6
	<hr/> 95	<hr/> 118	<hr/> 213
Deaths under five years	20	43	63
Still-born.....	3	8	11

Mortuary Report for February, 1899.

TOWNS AND REPORTERS.		POPULA- TION.	TEMPORARY ANNUAL DEATH RATE PER 1,000.																Total Deaths. Under five years.											
					RACES.	By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Nervous Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	By Races.	By Towns.	Deaths under five years.	Still-born.	
Asheville	W.	8,000		9.0												1	1	1	1	1	1	3			6	6	1	1		
Dr. M. H. Fletcher.	C.	5,000	13,000	43.2			24.0									1	2	2	1	1	1	10	2		18	18	4	1		
Charlotte	W.	17,153		9.1			15.6						1			1	3				2				13	34	5	2		
Dr. F. O. Hawley.	C.	9,000	26,153	28.0												2	2				2	17			21	48	2	2		
Durham	W.	4,000		18.0			26.0									3						3			6	13	3			
Dr. J. M. Manning.	C.	2,000	6,000	42.0												4						2	1		7	13	3			
Fayetteville	W.	3,500		13.7			10.9			1						1						2			4	5	2			
Dr. J. V. McGougan.	C.	2,500	6,000	4.8																		1			1	5	2			
Goldsboro	W.	4,500		18.7			27.4									3	1	1	1			2			7	16	1			
Dr. J. Broadhurst, Clk.	C.	2,500	7,000	43.2												3	2					4			9	16	3			
Greensboro	W.	6,000		10.0			15.6									2	1	1				3			5	8	2	1		
J. S. Michaux, C. Clk.	C.	1,000	10,000	24.0												3	2					3			8	13	1	1		
Henderson	W.	2,250		5.3			22.6										2	3	1				1			1	8	1		
Dr. Goode Cheatham.	C.	2,000	4,250	42.0						1						2	3					1			0	7	1			
Hillsboro	W.	400		0.0			0.0																		0	0				
Dr. C. D. Jones.	C.	300	700	0.0																					0	0				
Lenoir	W.	900		26.7			20.9															2			2	2				
Dr. A. A. Kent.	C.	300		0.0																					0	2				
Marion	W.	800		15.0			12.0										1								1	1				
Dr. B. A. Cheek.	C.	200	1,000	0.0																					0	1				
Monroe	W.	1,800		13.3			10.0										1		1			1			2	2				
Dr. John M. Blair.	C.	600	2,400	0.0																					0	2				
Oxford	W.	1,200		10.9			11.4										1								1	2				
Dr. G. A. Coggeshall.	C.	1,000	2,300	10.9													1								1	2				
Raleigh	W.	8,500		15.5			14.2						1			7	2	1	1						11	19	5			
T. P. Sale, Clerk B. H.	C.	7,500	16,000	12.8										1		3	3		3			4			8	19	1	1		
Rockingham	W.	1,300		27.7			27.4									1	1					1			3	4				
Dr. W. M. Fowlkes.	C.	450	1,750	26.7													1		1						1	4				
Rocky Mount	W.	1,000		15.0			9.2										1	1				1			2	2				
Dr. G. L. Wimberly.	C.	1,000	2,000	0.0																					0	2				
Salem	W.	4,100		11.7			10.5									2						2			4	4				
S. C. Butler, Mayor.	C.	450	4,550	0.0																					0	4				
Salisbury	W.	4,000		12.0			18.9									1	2		1		1				5	9	2			
Dr. W. W. McKenzie.	C.	2,000	6,000	30.0													1	2	1	1		1			0	9	2	2		
Scotland Neck	W.	775		0.0			0.0																		0	0				
J. A. Perry, Mayor.	C.	425	1,200	0.0																					0	0				
Tarboro	W.	1,200		20.0			19.2									2									2	4				
Dr. L. L. Staton.	C.	1,300	2,500	18.5																					0	1				
Warrenton	W.	985		0.0			6.8																		0	1				
Dr. P. J. Macon.	C.	765	1,750	15.7																		1			1	1				
Washington	W.	3,000		16.0			21.8									2						2			4	10				
Dr. Joshua Tayloe.	C.	2,500	5,500	28.8												3	1	1				1			6	10				
Weldon	W.	700		0.0			8.3																		0	1				
J. T. Gooch, Mayor.	C.	750	1,450	16.0												1									1	1				
Wilmington	W.	11,000		14.2			15.4									1	2	1	2		2		7		13	34	1			
Dr. W.																														

County Superintendents of Health.

Alamance	Dr. W. R. Goley.	Johnston	Dr. L. D. Wharton.
Alexander	Dr. T. F. Stevenson.	Jones	Dr. S. E. Koonce.
Alleghany		Lenoir	
Anson	Dr. E. S. Ashe.	Lincoln	Dr. L. A. Crowell.
Ashe	Dr. Manley Blyvins.	McDowell	Dr. B. A. Cheek.
Beaufort	Dr. Joshua Tayloe.	Macon	Dr. F. L. Siler.
Bertie	Dr. H. V. Dunstan.	Madison	Dr. Jas. K. Hardwicke.
Bladen	Dr. Newton Robinson.	Martin	Dr. W. H. Harrell.
Brunswick	Dr. D. B. McNeill.	Mecklenburg	Dr. C. M. Strong.
Buncombe	Dr. I. A. Harris.	Mitchell	Dr. C. E. Smith.
Burke	Dr. J. L. Laxton.	Montgomery	
Cabarrus		Moore	Dr. Gilbert McLeod.
Caldwell	Dr. A. A. Kent.	Nash	Dr. H. Brantley.
Camden	No Board of Health.	New Hanover	Dr. W. D. McMillan.
Carteret	Dr. F. M. Clark.	Northampton	Dr. H. W. Lewis.
Caswell		Onslow	Dr. E. L. Cox.
Catawba	Dr. D. M. Moser.	Orange	Dr. C. D. Jones.
Chatham	Dr. H. T. Chapin.	Pamlico	No Board of Health.
Cherokee	Dr. S. C. Heighway.	Pasquotank	Dr. I. Fearing.
Chowan	F. J. Hoskins.	Pender	Dr. George F. Lucas.
Clay	Dr. W. E. Sanderson.	Perquimans	Dr. C. C. Winslow.
Cleveland	Dr. R. C. Ellis.	Person	Dr. J. A. Wise.
Columbus	Dr. J. F. Harrell.	Pitt	Dr. E. A. Moyer.
Craven	Dr. L. Duffy.	Polk	Dr. H. D. Shankle.
Cumberland	Dr. J. Vance McGowan.	Randolph	Dr. T. T. Ferree.
Currituck	Dr. H. M. Shaw.	Richmond	Dr. W. M. Fowlkes.
Dare		Robeson	Dr. H. T. Pope.
Davidson	Dr. John Thames.	Rockingham	Dr. Sam Ellington.
Davie	Dr. James McGuire.	Rowan	Dr. W. L. Crump.
Duplin	Dr. J. W. Blount.	Rutherford	Dr. W. A. Thompson.
Durham	Dr. John M. Manning.	Sampson	Dr. R. E. Lee.
Edgecombe	Dr. L. L. Staton.	Stanly	
Forsythe	Dr. John Bynum.	Stokes	Dr. W. L. McCaless.
Franklin	Dr. E. S. Foster.	Surry	Dr. John R. Woltz.
Gaston	Dr. J. H. Jenkins.	Swain	Dr. A. M. Bennett.
Gates	Dr. R. C. Smith.	Transylvania	Dr. M. M. King.
Graham	No Board of Health.	Tyrrell	No Board of Health.
Granville	Dr. G. A. Coggeshall.	Union	Dr. J. E. Ashcraft.
Greene	Dr. Joseph E. Grimsley.	Vance	Dr. W. J. Judd.
Guilford	Dr. A. E. Ledbetter.	Wake	Dr. R. B. Ellis.
Halifax	Dr. I. E. Green.	Warren	Dr. T. G. Williams.
Harnett	Dr. O. L. Denning.	Washington	Dr. W. H. Ward.
Haywood	Dr. J. Howell Way.	Watauga	Dr. W. B. Conneill.
Henderson	Dr. J. G. Waldrop.	Wayne	Dr. Jas. H. Powell.
Hertford	Dr. John W. Tayloe.	Wilkes	Dr. J. W. White.
Hyde	No Board of Health.	Wilson	Dr. C. B. Walton.
Iredell	Dr. Henry F. Long.	Yadkin	Dr. M. A. Royall.
Jackson	Dr. J. H. Wolff.	Yancey	Dr. J. L. Ray.

[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed. If so, state number of cases.

Whooping-cough Typhoid Fever

Measles Typhus Fever

Diphtheria Yellow Fever

Scarlet Fever Cholera

Pernicious Malarial Fever Smallpox

Hemorrhagic Malarial Fever Cerebro-spinal Meningitis

What have been the prevailing diseases in your practice?

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Has any epidemic occurred among domestic animals? If so, what?

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What is the sanitary condition of your section, public and private?

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General Remarks:

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..... M. D.

..... 189..... N. C.





